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Journal of Special Operations Medicine

A Peer Reviewed Journal for SOF Medical Professionals



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Dedicated to the Indomitable Spirit & Sacrifices of the SOF Medic

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From the Surgeon



Greetings from HQ USSOCOM and congrats on your continued magnificent support to our SOF scattered all over the world defending freedom and carrying on the missions. You continue making us all very proud of your accomplishments.

Since our last journal, USSOCOM has had a leadership change with General Brown and VADM Olson are firmly in the seat of command. These men are very experienced SOF warriors and we are in great hands, for they are committed to the SOF Truth that "Humans Are More Important Than Hardware."

Advanced Technical Applications for Combat Casualty Care (ATACCC) came and went by for the second year since 9/11--recall that it was during ATACCC that the attack on America happened. There were great presentations--we got feedback by medics with first-hand experience in OEF and OIF and we are more committed than ever to meet the needs of our medics/corpsmen/PJs out there leading the way. Several important issues were brought up:

1. There was much discussion on the hemostatic agents deployed into the conflicts. It turns out that the Fibrin Dressing was not used and that speaks very highly for the discipline of our medics in following the guidelines of the FDA IND protocol--use only when all other interventions have failed. The Chitosan dressings were used with general success in most cases and we have no negative feedback though not many were used. **Editors Note:** Please see R&D article on Fibrin Dressing recall. QuikClot was used by the USMC Corpsmen on several occasions and we are gathering more data. The concerns about heat generation, tissue charring, pain on application, and other safety concerns has not lifted the SOF policy to not use this--we need to have our safety concerns addressed first. Col Holcomb and the folks in San Antonio will work it out in the lab and then we will have answers. Bottom line--there are several products out there and we hope they all work and are safe. If you have personal experience with any of the products, please send it our way for the data is very important.

2. We reviewed the use of tourniquets and we were particularly interested in the performance of the "one-handed" tourniquet invented by one of our soldiers and fielded quickly. Generally speaking it worked well on upper extremity wounds but was less successful when applied to the thigh with lower extremity wounds--no big surprise when you picture the size of the thighs on Rangers, etc. However, under the leadership of Ranger Miller et al, his ratchet tourniquets are also worthy of being studied. The last day of the meeting was a little disappointing--the panel that was discussing tourniquets was advocating for the old "sticks and rags" and some of them were going home to look for a stronger dowel! But that is our problem here at the HQ--the medics want a tourniquet that can be applied with one hand (on the chance you only have one hand that is functional or that the opposite hand is otherwise occupied) and it needs to be small in weight and cube and be made available to every Soldier, Sailor, Airman, and Marine in harms way. You have made that very clear--self-aid is the issue with tourniquets and those who must wait for the medic to stop hemorrhage are at high risk of exsanguination. Worry not, that is why we have a Biomedical Initiatives Steering Committee (BISC) and we are listening and will get you gear that meets YOUR requirements.

3. Modularization of medical capability complemented our SOF combat paramedics out front. Far-forward surgical capability, critical care transport capability, and transfer to a robust aeromedical evacuation capability back to Europe and then CONUS saved our forces and proved itself worthy. MSGT Brochu and I rode the aeromedical evacuation system all the way back to Scott Air Force Base and we can attest to how terrific the system is. The only flaw we see is in communication to units on the status of their personnel within the system. These patients and casualties are "brothers and sisters" to the folks in the losing units and the flow of info needs to go forward for sure, but also back to the units to alleviate concern for colleagues--we will work that hard.

So, again, you make us proud every day. Keep pushing us to fix your issues and make us have the fix match the circumstances you deal with, not some artificial requirement we dream up. Keep on keepin' on!

GBY/GBA dhammer



SENIOR ENLISTED MEDICAL ADVISOR (SEMA), MSG
Michael A. Brochu

From the ROAD DOG in the BIG HOUSE,

Seems that these quarters come faster than they should so let me try and update you on where we stand at the publishing of this edition of the journal:

USSOCOM State Department of EMS and Public Health

State Requirements Board : The Requirements Board met 25-29 August 2003. This meeting was conducted in the Electronic Integration Center (EIC) at Special Operations Command on MacDill Air Force Base, Tampa, Florida. The Board members are:

MAJ Barber	Board Chairman (Non-voting)
MAJ Lutz	Physician, JSOC Subordinate Unit
MAJ Wheeler	Physician, USASOC Subcomponent
LT Bestachio	Physician, NAVSPECWARCOM Subcomponent
Maj Butrois	Physician, AFSOC Subcomponent
MSgt Krenzke	AFSC 4N0X1, SEI 496
MSgt Donovan	AFSC 1T2X1
SSG Williamson	MOS 91-B/W (Rangers)
MSG Lamoreaux	MOS 91-B/W (160th)
MSG Rodriguez	MOS 18-D (Group)
SFC Sechrest	MOS 18-D (Psyops/CA)
HMCS Mercer	NEC 8491
HM1 Fiske	NEC 8492
HM1 Fletcher	NEC 8427
HMCS Sine	

What's the State Requirements Board?

~ A limited “self-governing” embodiment of fifteen members authorized to establish State (**Joint**) minimal medical educational requirements based upon specific target elements, mission profiles, and operational environments (i.e. various atmospheric levels and climates).

~ A newer version of the old Combat Task Selection Board (CTSB) with a twist.

- Board composition is made of volunteer medical doctors and medical operators from the “ground” level.
- Board is virtually independent with very limited control measures; therefore, establishing nonpartisan, non-bias, and “free to act” business practices.

At the meeting in Aug 03 the Chairman opened the meeting with his guidance on how the board would accomplish the task of recommending SOCM tasks or standards to the Curriculum and Examination Board (CEB). The board members reviewed the current SOCM task list (approved in 1999) that had been provided and used the Electronic Innovation Center to vote on a 186 item SOCM task list. The list was comprised of the majority of the SOCM Program of Instruction (POI.) The vote was intended to remove any items that the board felt were unnecessary for the SOCM Medic. Eleven tasks were singled out with a less than 60% vote from the board. The board then discussed these items individually and made recommendations on each. Each member of the board briefed their commander's mission requirements and stated the medical tasks that are needed to be added to support each mission. After each member spoke, the new task list was scrubbed and racked and stacked by assessing the DIFFICULTY, IMPORTANCE, and FREQUENCY. We are gathering all the data and will send it through your SEMA as to the outcome of the board.

State Curriculum and Examination Board (CEB):

The next step is to put those requirements into the curriculum and then develop ways to assess the SOF healthcare provider's competency level. This curriculum (based on mission requirements) will define the length and depth of the SOCM course. When the Joint Medical Enlisted Advisory Committee (JMEAC) and the Board of Regents (BOR) approve of the curriculum THEN and only then will changes be made to update the current SOCM and SOFMSSP curriculum.

What's the Curriculum and Examination Board?

- ~ A limited "self-governing" embodiment of twenty-seven members authorized to:
 - establish State (**Joint**) minimal medical educational curriculums based upon educational requirements developed by the State Requirements Board (SRB)
 - develop State cognitive and psychomotor examinations
 - accredits institutions of higher learning to teach State curriculums.
- ~ This is a new concept, made up of healthcare providers and educators specializing in education.
 - Board composition is made of volunteer medical doctors, medical educators, and medical operators that are the "cream of the crop" in their occupations.
 - Board is virtually independent with very limited control measures; therefore, establishing nonpartisan, non-bias, and "free to act" business practices.

Long range dates for future JMEAC: All enlisted folks are invited to these meetings. That is the main reason I select sites around the country. It gives ya'll a chance to be a participant instead of just being in the back of the patrol wondering when is the next patrol base! You are the blood of the Enlisted Advisory Committee. Link up with your SEMA and ask to be allowed to attend. We can only speak for you if we have your feedback.

28 – 29 Jan 04	NAVSPECWARCOM Host (San Diego)
14 – 15 April 04	USSOCOM Host (Tampa)
14 – 15 July 04	AFSOC Host (Hurlburt Field)
20 – 21 Oct 04	USASOC Host (FBNC)

Special Operations Medical Association

You are invited to run in the 2nd Annual SOMA Challenge.

What is the Challenge?

The Second Annual SOMA Challenge is scheduled for Tuesday, 9 DEC 03. Again, this combined physical fitness/medical scenario event will be highlighted by its unpredictability in types and number of events to reflect the unpredictable nature of the SOF mission. The events, however, will not be daunting, so no one should feel intimidated about entering, although the SOF super jocks and super medics will still feel

challenged (you can still do well even if you have no medical background). Individuals, as well as two-person teams, can compete. For teams, the best score of the two participants for each event is used; both team members do not have to participate in the entire challenge - e.g., one can run, the other can take the tag and then swim. No special equipment can be used - in fact, no watches/timepieces will be allowed this year. Gloves may be used - but who knows if you'll need them?? The prize categories will be: first male overall; first female overall; first male team overall (mixed male/female teams will be considered "all male"); first all-female team overall; oldest individual finisher (regardless of place); oldest team finishing (determined by the combined ages of the team members).

Date: 9 Dec 2003

Location: Hyatt of Tampa

Information: \$15.00 entry fee. Register online on at www.specialoperationsmedicalassociation.org Bring all your gear needed to run. Race packets can be picked up at the SOMA conference.

If you have suggestions, concerns, and/or recommendations for the JMEAC, pass them along to your SEMA and it will be addressed. The only thing that is required is that you.....“SEND IT”



COVER

A US Army Special Forces sergeant gives a Self-Aid and Buddy Care training class to a group of Free Iraqi Forces (FIF) at an undisclosed location on April 8, 2003. The FIF is here to receive training from US Army Special Forces before going into combat in support of Operation Iraqi Freedom.

Photo by Staff Sergeant Quinton T. Burris.



The *Journal of Special Operations Medicine* is an authorized official quarterly publication of the United States Special Operations Command, MacDill Air Force Base, Florida. It is in no way associated with the civilian Special Operations Medical Association (SOMA). Our mission is to promote the professional development of Special Operations medical personnel by providing a forum for the examination of the latest advancements in medicine.

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Articles, photos, artwork, and letters are invited, as are comments and criticism, and should be addressed to Editor, *Journal of Special Operations Medicine*, USSOCOM, SOC-SG, 7701 Tampa Point Blvd., MacDill AFB, FL 33621-5323. Telephone: DSN 299-5442, commercial: (813) 828-5442, fax: -2568; e-mail JSOM@socom.mil.

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From The Staff

Just a reminder that there are important changes in the distribution of the *Journal of Special Operations Medicine* (JSOM) you need to be aware of. To assure the JSOM continues to be available to all who find value in it, we need to comply with the intent of the current distribution rules governing this publication.

We will continue to send the JSOM to all our SOF units and the active editorial consultants without change. One of the new changes in SOMA membership is that you will now receive the JSOM as part of your membership. If you are a SOMA member and did not receive your journal, you can contact SOMA through www.specialoperationsmedicalassociation.org. The JSOM is also available as a paid subscription from the Superintendent of Documents, US Government Printing Office, for only \$30 a year at <http://bookstore.gpo.gov/subscriptions/sub011.html#006>. Thank you for understanding our need to change the distribution of the JSOM in order to be in compliance with current distribution rules.

WE ARE ONLINE!!! Thanks to the cooperation and efforts of the Joint Special Operations University, the JSOM is now available online to all DoD in DEERS at <http://www.hurlburt.af.mil/jsou>. There are instructions on their homepage as to how to enter their medical link and access issues of the JSOM. You can even link straight to the Government Printing Office to subscribe to the JSOM.

We are now in our twelfth edition of the journal and continue to need your article submissions and photos. They are what keeps us going and they're what makes this journal so unique. It is a sharing of your lives and missions as you go forth as instruments of national foreign policy. We can't do it without your input; you are what the journal is all about!

The JSOM continues to be one of the most excellent and righteous tools we have to span all the SOF services and to share medical information and experiences unique to this community. The JSOM survives because of generous and time-consuming contributions sent in by clinicians, researchers, and current and former medics from all the Services who were SOF-qualified and/or who served with SOF units. We need your help! Get published in a peer-review journal NOW! We are always looking for SOF-related articles from current and/or former SOF medical veterans. We need you to submit articles that deal with trauma, infectious disease processes, and/or environment and wilderness medicine. We also need photos to accompany the articles or alone to be included in the photo gallery associated with medical guys and/or training. If you have contributions great or small... fire 'em our way. Our E-mail is: JSOM@socom.mil.

In order for us to give you CME, you all have to submit the articles. Remember, this is YOUR journal. CME provision is a hot topic here in the Surgeon's Office; the JSOM has been working hard to provide you with quality articles that make available another means of obtaining your required CME. The medics are NOT using them as much as the docs. Within the last two years only a handful of enlisted medics have applied for credit. As MSG Brochu states, "This publication will be a major area that SOF-P can get some of the REQUIRED CMEs at no cost to the command. This journal was, and continues to be, produced for the SOF medic so you guys have to get fired up and send in your stuff." We need you to write and encourage others to write. You all have a lot to say; share it with others.

The process for a CME article to get published is as follows: Potential CME articles are submitted to the Uniformed Services University of Health Sciences to be reviewed for accuracy and relevance by either CDR Barry Wayne or MAJ Troy Johnson, both assistant professors and new to our CME staff. After their review, determination of how many CME/CNE credits will be applied is made by beta testing for how long it takes to read the article and take the test. Many of the articles that have been submitted to USUHS for CME lack the length needed for CME credit. As you will note, there is not a CME article in this edition of the JSOM, however, you have the potential to obtain CME this quarter through SOMA attendance 8-11 Dec. We hope to be able to offer you CME through the JSOM again in the Winter 04 edition.

In this edition of the JSOM, we honor our fallen brother, SFC Christopher Speer.

Enjoy the Fall JSOM, send us your feedback, and get those article submissions in to us!

Major DuGuay

Journal of Special Operations Medicine

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Colonel Hammer's military and medical career began in 1958 when he served as a U.S. Navy Combat Medical Corpsman attached to U.S. Marine Corps infantry, artillery, and communication/reconnaissance units. Following discharge, he completed his BS and MD degrees at the University of Michigan in 1967 and 1970, respectively. Following nine years of civilian medical practice in a multi-specialty group in Grand Rapids, Michigan, he reentered military service as a Flight Surgeon at Beale AFB, CA. In 1984, he completed the Air Force Residency in Aerospace Medicine at Brooks AFB, Texas, during which period he earned a Masters in Public Health Degree from

Harvard University. Colonel Hammer has spent the majority of his career in aerospace medicine and direct line support assignments, has commanded three medical groups, and has been assigned to the ARRS/SG, the AFSOC/SG and the USAFA/SG. He is a chief flight surgeon and a master parachutist.

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Maj DuGuay joined the Army Reserve in 1987 and served as a nurse in a Combat Support Hospital unit for three years before switching services in 1990 to become an Air Force C-130 Flight Nurse. She is currently an IMA reservist attached to the SOCOM/SG office. Maj DuGuay has a Bachelors in Nursing and a MBA/Management. Her career includes being a flight nurse in both the military and private sector, 15 years of critical care and emergency room nursing experience, plus being an EMT and a legal nurse consultant. She also served as the military liaison to her Disaster Medical Assistance Team (DMAT.) Prior to the SG office, Maj DuGuay's experience at

USSOCOM includes an assignment in the Center for Force Structure, Resources, Requirements, and Strategic Assessments.

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3. Articles should be double-spaced, twelve point font, aligned on the left and justified on the right.
4. Important: Include an abstract, biography, and photo of yourself as part of the article.
5. Use of acronyms should be held to a minimum and when used they must be spelled out the first time.
6. Remember that your audience is inter-service, civilian, and international.
7. Every article has a point to make, which is traditionally stated in the introductory paragraph and restated in the closing or summary. Subtlety is not usually a virtue in a medical publication.
8. All references **MUST** be cited in the text and in numerical order. The references **MUST** be arranged in the order of appearance in the text. Give the full name of the journal. Use the following style of citation: author names, title of article: journal name, year, volume number, inclusive page numbers. If unsure, please contact us at JSOM@socom.mil.
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11. We reserve the right to edit all material for content and style. We will not change the author’s original point or contention, but may edit clichés, abbreviations, vernacular etc. Whenever possible, we will give the author a chance to respond to and approve such changes.
12. Again, the JSOM is your journal. It is a unique chance for you to pass your legacy to the SOF medical community.

Take advantage of the opportunity.



I seem to have been under the mistaken impression that things would slow down after a couple of wars. But no! All the little ankle biters that we'd been ignoring have surfaced to take up our time. Plus, the deployment speed hasn't slowed and neither have the casualties.

I have made several trips to Walter Reed Army Medical Center recently, some with somber side trips to Arlington National Cemetery. Walter Reed is currently ably commanded by Colonel John Jaffin, who once was Group Surgeon for 5th Special Forces Group (Airborne). I would like to thank the numerous fine 18D soldiers who have served as "SF LNOs" at Reed and in Germany and Spain keeping track of casualties. The tried and true way, an LNO, beats a database any day. Also, Major Barber in my office has done great work in this area too. Thanks, Rick.

Most new medical officers and PAs have reported, deployed, and some are even coming back now. Our five physical therapy officers are present for duty and developing their plans for success. The JSOMTC just graduated a big SOCM class with a whole bunch staying for 18D, so things are looking up for fill in a year or two.

By the time you read this it should be Special Operations Medical Association meeting time. Hope to see you all in Tampa. We had Rear Admiral Carmona, the US Surgeon General, down to Fort Bragg recently. Hope he gets to come to Tampa again this year.

My chief of medical operations, Lieutenant Colonel Frank Newton has become the world resident expert on imminent death processing. I pass the pencil to him to finish this column:

Valor and Sacrifice

Quick decisive action when a comrade is gravely wounded may not be enough to save his life.

USASOC



Rocky Farr, MD
COL, USA
Command Surgeon

Expeditious medical retirement when death is imminent will often increase his family's income by ¼ million dollars over the next 20 years! Regardless of the uniform that he wears, ALL Services follow the same DOD Directives pertaining to medical retirement. This article will bring you up to date on current law, and what is required of SOF docs to help ensure that families receive the greatest possible benefit.

Shortly after 9-11, Congress passed legislation to provide Survivor Benefits to families of servicemen who had died on active duty. Public Law 107-107, Section 642, of the National Defense Authorization Act was intended to make it unnecessary to retire Soldiers in the heat of battle. Unfortunately, as a result of a dollar for dollar offset of benefits awarded from Veterans Affairs, only the most senior NCOs and officers actually receive any compensation from the Survivor Benefit Plan (SBP). The family of an E-6 who served for twelve years would receive approximately \$49.00 per month in Survivor Benefits. Without this offset, his family would receive \$997.00.

The Survivor Benefit Plan is a type of military pension based on 55% of a serviceman's qualifying pay. In addition to the Survivor Benefit Plan, families receive compensation from the Department of Veterans Affairs in the form of Dependency and Indemnity Compensation. By law, a dollar for dollar

offset reduces the Survivor Benefit Plan by as much as \$948.00 per month (the current Dependency and Indemnity Compensation paid to a surviving spouse). To avoid the offset, the SBP annuity is paid to surviving children. Children can only be named as the recipient if the soldier is a single parent, or the soldier has been retired.

An example from combat operations in Operation Enduring Freedom is illustrative. Two service members were critically wounded in a fire-fight at Shkin, Afghanistan. The injured soldier was retired and died later that day. The airman died before the AF Physical Exam Board could complete

his retirement. A pregnant wife and two year old survived the airman. Their SBP is zero due to the offset of the VA benefit. Had the airman been retired, his family's SBP would have increased by \$650.00/month until the child's 23rd birthday.

The USASOC Surgeon and Command Group are actively pursuing a legislative remedy. Amending Public Law 107-107 to allow for the concurrent payment of VA benefit (Dependency and Indemnity Compensation) along with the Survivor Benefit Plan is needed. Our fallen comrades who have died defending our Nation's freedom have made the ultimate sacrifice. Ensuring that their families are cared for in this way is the right thing to do.





I sit here in my office writing as San Diego area fire fighters and police battle multiple raging fires only a few miles away that have consumed over 300,000 acres at this point and over 800 homes. I have been told there is no need at this time for additional medical support and to stay at home, keep the doors closed, and conserve electricity. The heroes are already out there defining themselves with their actions. My role in this disaster comes from a decision the authorities have made for my colleagues and me. Deciding what is important in life is not always so simple.

In a community as small as Navy Special Warfare, one individual's actions have a significant impact on the community and its policies. As a new-comer to the NSW community, nothing concerns me more than assuring the physicians in our community understand their roles and responsibilities. Today the focus and mission for the Navy SPECWAR physician community is to be resource managers and QA agents to assure the readiness of SEAL Corpsmen. Our primary responsibilities to the line commanders we serve are force protection, maintaining a fit force, preventative medicine, and supporting families and retirees. At NAVSPECWARCOM we achieve this by making the SEAL Corpsmen our top priority and making them and their families as ready as possible to fight the war on terror. This sounds somewhat mundane compared with the possibilities and potentials that exist within the community. If by chance we get carried close to the battle and to places and evolutions that are exciting and interesting, then it should be by chance and not by design. That is not our mission. My hope and desire is for Navy SPECWAR physicians to understand and ensure SEAL Corpsmen practice standard of care medicine.

The best measure of standards of care medical practice is our SEAL Corpsmen to obtain USSOCOM Department of EMS and Public Health Care (paramedic) certification that must be renewed every two years. Not only is it considered a professional level certification but it also answers the Sea Warrior initiative under Sea Power 21 by provid-

NAVSPECWARCOM



Edward Woods, MD
CAPT, USN
Command Surgeon

ing a strong vocation in the form of paramedic training to SEAL Corpsmen that can be carried into the civilian community. Of course, certification only has value if it is maintained and coveted by the medical community it serves to support. Presently SOCOM and its component commands are responsible for paramedic certification maintenance and BUMED provides certification for SEAL IDCs. Within the Navy, BUMED does not officially credential Navy SEAL Corpsmen as paramedics but provides resources in the form of physicians to oversee the certification and standard of care practices. The distinction between certification and credentialing and privileging are important distinctions that are left explained by professional affairs coordinators. Suffice it to say SOCOM certification and maintenance are of paramount importance in defining standard of care within the Navy SPECWAR medical community.

This gets back to my comment about how with so few practicing physicians in the Navy Special Warfare community the impact of a single individual is significant, and therefore so to is the weight of responsibilities on his or her shoulders. Despite this level of responsibility SPECWAR billets for Navy physicians community are the plumb operational jobs within Navy operational medicine. We select the best and brightest in support of our mission and the SEALs. For that reason I know we will continue to succeed in maintaining the overall readiness of our SEAL Corpsmen that is reflected specifically in SOCOM certification and maintenance. Good luck to all of you in your quest for excellence!



AFSOC



Dan Wyman, MD
Col, USAF
Command Surgeon

In Air Force vernacular, “I’ve got the stick!” It is an honor and privilege to be the AFSOC Command Surgeon and serve with the “Quiet Professionals.” My first three months have just flown by as I have attempted to learn the new job... kinda like drinking from the SOF fire hose of knowledge. I would like to recognize our outstanding AFSOC/SG staff members as well as my fellow USSOCOM Surgeons and their respective staffs... they are all true professionals and have assisted in my spin-up immensely.

Along with a new SG comes a few changes. We have formally stood up a Medical Modernization Division (SGR). Led by Maj Jeff Ellis, this division will oversee all medical modernization within AFSOC. They will collect all the lessons learned, shortfalls, wish lists, etc, from our operators, develop requirements documents, commission research and operational test and evaluation, and deploy final products to the field. The key to this process is the involvement of our operational medics every step of the way. We currently have several initiatives underway to include deployable combat oxygen systems, laser eye protection, remote vital signs monitoring capability, and updates to the Air Transportable Treatment Unit. To those medics in the field, we need your participation, we need you to engage in every level of this process.

On 1 Oct 03, Moody AFB was realigned to AFSOC. I would like to welcome all the awesome medics at Moody to AF Special Operations Command! Along with Moody, AFSOC gained the Combat Search and Rescue (CSAR) mission. So... AFSOC/SG is now responsible for medical oversight of worldwide AF CSAR operations. We will soon be standing up a Pararescue Medical Operations Division staffed by a flight surgeon and PJ (at least that’s what I’m aiming for). Through this division

we will work to standardize all PJ medical issues: training, operations, equipment, etc. I know this is a tall order and, again, only through the dedication and commitment of our fielded Pararescue forces will we succeed.

Over the past few months I have had the opportunity to review OEF/OIF SOF medical operations “After Action Reports and Lessons Learned.” You all rock!! From far forward life-saving medical care, personnel rescue and recovery, and casualty evacuation to forward base medical operations and Task Force medical command and control, SOF medics excelled and have received tremendous accolades from every level of command. We will not rest on our laurels and we will continue to lead the way. We will continue to modernize our training, tactics, and equipment in order to deliver even greater medical capability to the point of wounding. We will continue to team with our warriors to maximize their operational performance as well as prevent injury and mitigate the effects of wounding if/when it does occur. And we will continue to deliver world-class medical care any time and any place.

SOMA is rapidly approaching. I hope to see many of you there. I am working with Chief Huberty to put together an AFSOC Surgeon’s Conference on Sunday, 7 Dec 03 (day before SOMA starts). Plan on arriving a day or two early to attend the AFSOC/SG session if you are coming to SOMA.

Again, it is a true honor to be a member of the SOF community. Please do not hesitate to let me know what AFSOC/SG can do to help you bring medical “Excellence” to the tip of the spear.



LTC William Schiek
USSOCOM Surgeon's Office OPS GUY



I'd like to begin my first JSOM OPS Update by thanking my predecessor, LTC Lou Nelson, for his assistance in making my transition painless.

Shortly after my arrival to the command in mid-July, the Surgeon's office convened a medical lessons learned conference. The purpose of the conference was to identify areas requiring improvement within USSOCOM and to assign responsibility for developing courses of action for solutions. Each Theater Special Operations Command (TSOC) and component sent representatives to rank issues in order of importance and provide comments and recommendations.

The top eight actionable tasks in order of importance identified during the conference were:

1) SOF requirement for an organic surgical capability, 2) SOF medical logistics planning and execution, 3) clinical and staff training and education, 4) MEDEVAC/CASEVAC, 5) joint manning document development and staffing, 6) medical support planning for WMD/NBC operations, 7) medical deployment readiness, and 8) patient administration and tracking. I'll highlight some of our lessons learned discussion as it pertains to the top 8 tasks.

Organic surgical capability: With the exception of two AF Mobile Forward Surgical Teams, SOF does not possess an organic surgical capability to support the Global War on Terrorism or larger operations. The nature of our business requires a far forward, rapidly deployable, stand-alone surgical capability. Today, SOF relies on the conventional forces to provide surgical support. Four conventional Army FSTs and several conventional AF EMEDS were used in support of SOF. While these teams are effective, they were in some cases slow to deploy because of the cumbersome request for forces/time-phased force deployment data (RFF/TPFDD) process. They are too heavy and require inordinate lift assets for deployment. They are not organized, trained, or equipped to operate independently of other conventional medical support, and they do not possess a patient holding capability. The assembled group agreed to design a capability to provide resuscitative surgery, patient holding for 4

pax for up to 48 hours, and capability to deploy independently of conventional medical assets. The design of this capability is ongoing.

SOF Medical Logistics Planning And Execution: Difficulties with class VIII A and B, and base operating support (BOS medical) highlight a requirement for training, organization, and materiel changes in order to improve in the area of medical logistics. It was decided by the group to conduct a follow-on meeting to discuss SOF medical logistics support. We are coordinating with the special operations acquisition and logistics (SOAL) planners to include medical and CLVIII (medical supplies) support to SOF in the USSOCOM logistic conference from 2-4 December 2003.

Clinical Training And Education: The clinical (nursing and sick-call) skills of our SOF medical personnel were identified as an area requiring improvement. The USSOCOM-SG office conducted a medical requirements board from 25-29 August 03 to address clinical training requirements identified during the conference.

Staff Training And Education: Staff training for SOF medical planners does not come from a single source. Medical staff planning is taught in a variety of service schools and often targets only conventional medical planners. In order to provide our medical planners with the best possible training in preparation for contingency ops, it is imperative to provide world-class training in a single course. Lt Col McAtee at the Joint Special Operations University (JSOU) is taking a comprehensive look at all courses offered to the service medical planners in order to design one specifically for the SOF medical planner.

MEDEVAC/CASEVAC: SOF components are not completely interoperable when it comes to MEDEVAC/CASEVAC. SOF must ensure interoperability within the SOF community and must strive for a seamless transition from SOF to the conventional medical forces. AFSOC is working to address tactics, techniques, and procedures (TTPs) with USASOC to improve in this area.

JMD Development: TSOCs are not staffed

with permanent medical planners. The value of TSOC medical planners was highlighted during OEF and OIF. The TSOC medical planner billets are presently staffed with “temporary hire personnel” and will cease to be filled in FY04. Because SOF relies completely on the conventional force for Level II and above medical care, a full-time permanently assigned TSOC medical planner is required to coordinate conventional medical support requirements for SOF. TSOCs must POM for three full time garrison billets and develop deployable joint manning documents (JMDs). USSOCOM will advocate permanent garrison billets.

Medical Staffing For a JSOTF: There is not a standard minimum manning requirement for JSOTF medical staffing. The makeup of each JSOTF is unique and is situationally dependent. However, this does not eliminate the requirement for a medical plans/ops section in each JSOTF. Although groups with organic medical personnel often are tasked as a JSOTF HQ, it is not wise to perform both JSOTF and subordinate medical planning roles with only one staff. There should be a baseline medical planning staff footprint in each JSOTF. SOCJFCOM’s Maj Bill Tyra is the lead for JSOTF staffing documents.

Medical Support Planning For WMD/NBC Operations: The conference highlighted the requirement to identify SOF essentials for the management of WMD casualties forward of and/or independent of conventional forces. Mr. Bob Clayton volunteered to gather the requirements for possible RDT&E.

Medical Readiness: Components requested a review of USSOCOM Directive 40-4: specifically, deployment criteria (duration of deployment) for pre-deployment health assessment. The draft 40-4 was distributed in late September for component review and comments.

Patient Tracking: In order to provide the best possible tracking of SOF patients in the medical evacuation and treatment system, units provided liaison officers (LNOs) at the major evacuation and treatment hubs during OEF and OIF. In many cases, there was a duplication of effort within USSOCOM. To reduce duplication of effort, the group recommended a standardized SOF LNO package at all Level IV medical treatment facilities receiving SOF patients.

I appreciate the time and effort of all involved with this conference. It was a pleasure to do business with you and I look forward to making progress on these important projects in the next few years.



CPT Steve Briggs, Chief, Education & Training

A Bumpy, Dusty, Long and Winding Road

The Beatles sang: *"It's a long and winding road..."* We have all traveled many like it. The road in which we now travel is the same. It is not a smooth paved interstate. Instead, it is laden with obstacles; around each bend lies different grades, boulders, pot holes, and unexpected delays.



Flashback to some developing country-- Honduras, Bolivia, the Philippines, Afghanistan, Iraq, or the back roads of the south. At times the dust will be so thick that our speed will slow to a crawl. At times we will come to "T-intersections" and crossroads in which we will have to decide which path we will take. We will often come under fire from those opposing our progress. However, I am confident that we are proceeding down the right road and will come to our final destination with purpose.

No, I'm not talking about a physical road that we'll actually travel in a vehicle, but the cobblestone road that we embarked upon with the creation of the USSOCOM's Department of EMS and Public Health. This was a major detour from the NREMT for credentialing of our Special Operations Combat Medics (SOCM) graduates.

Many of you are willing, while some are unwilling, to journey with us as we traverse and often bulldoze this new road. Speculation and misinformation are like those maps made 40 years ago. They are of very little guidance, made with archaic means and often do not show the new views and technology of today and the future.



So, like a road sign, this office will attempt to keep you informed of what the road ahead looks like. As most of you are fully aware, the NREMT credentialing process for our medics was replaced in April 03 with the USSOCOM Department of EMS and Public Health. This was in response to demands and requirements generated from the line commanders. The two years interim guidance was initiated in April and the infrastructure is set for completion by April 2005.

This course is a process in progress and we recently (25-29 Aug 03) held a Requirements Board (RB). This RB was comprised of both enlisted and officer medical operators. All volunteers, they were tasked to come up with joint interoperable medical requirements (task list) to be taught at the SOCM course.

About the same time of publication (third week of November) of this edition of the journal, we will convene another board of volunteers. These individuals, collectively known as the Curriculum and Examination Board (CEB), are a collegiate group of academic and medical professionals. Their charter will include: review the current curriculum; ensure that the training passes all benchmarks that define "the standard of care"; make certain that the curriculum is inclusive of cutting edge medical technology and protocols; and develop an examination for analysis of the training received. Most importantly is that the curriculum meets the requirements asked of the line and is unsurpassed in quality. The JSOMTC has already blazed a path and smoothed out most of the course with the development of the Special Forces

Medical Sergeant Course. It will be the responsibility of this board to take those pieces of the courses taught at the JSOMTC and integrate them into the SOCM course to ensure that all the graduates are interoperable and have a common core skill set. From this common core, the components will be responsible for developing specific training that encompasses those germane requirements for their respective missions they support.

Quality control of the training ensures our credibility with outside civilian agencies. It facilitates both maintenance of accreditation and required reciprocity for our medics. Keeping in good relations with certain protocol agencies like the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) and Committee on Accreditation of Educational Programs for the Emergency Medical Services (CoAEMPS) is very important to the JSOMTC and our training. We want to ensure that the capabilities that the CEB develops meets the common sense scrutiny and meets the requirements coming from the field. The curriculum will be developed

with coordination efforts between the JSOMTC, RB, component surgeons, and approval by the Board of Regents (BOR).

We just met with the USSOCOM Commander and have been given his endorsement to change the electorate of the Board of Regents (BOR). We felt that the line guys own the assets; thus, they should have a seat at the BOR and make the decisions. The new BOR constituency will be that of the Chiefs of Staff, and the Surgeons will be “ex-officio” advisors to the BOR. Hopefully, this will expedite decisions brought before the BOR and meet the intent of General Brown’s guidance to streamline the bureaucratic process.

So keep your eye on the road ahead. We will try to keep you posted on any new changes, issues, or comments from the line. Likewise, we want to hear from you with any comments, concerns, or grievances with respect to training. Remember, don’t tell us that it’s all messed up and leave it at that. Tell us your concerns with some recommendations for changes. We look forward to hearing from you.



BANGKOK AND THE BODY HUMAN: THE SIRIRAJ HOSPITAL MEDICAL MUSEUMS

Mitch Meyers, MD

ABSTRACT:

To refresh or improve their knowledge of the medical sciences, SOF medics training in Thailand will find touring the Siriraj Hospital medical museums interesting and educational from both a scientific and cultural perspective.

Introduction:

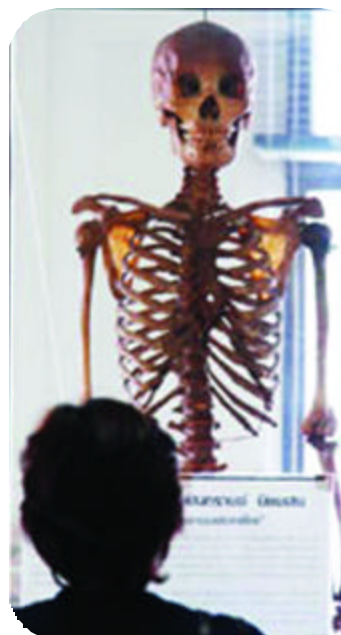
Over two millennia ago Hippocrates, the Greek physician and “Father of Medicine,” penned what would become the famous Latin aphorism of healing, “*Ars longa, vita brevis.*”¹ (Our art is long, life is short). This implied that study and mastery of the art of medicine would take a much longer time than our firefly existence would allow.

Although our life expectancies have doubled since the pinnacle of the ancient Greek civilization, the materia medica has increased by orders of magnitude making Hippocrates’ statement even more meaningful today. For SOF medics who must constantly strive to master both the professions of arms and medicine, taking advantage of every opportunity to learn is essential to gaining and maintaining proficiency.

Every year Cobra Gold and other US-Thai military operations make Thailand a popular place for Special Operations Forces to travel and train. One of the unique places for medics to learn their art while there is a little off the beaten path from Bangkok at the Siriraj Hospital medical museums. Siriraj is the oldest hospital in Thailand and is affiliated with the Mahidol University School of Medicine. The six museums located across the hospital grounds have been established over the last century and are used not only to teach the medical and nursing students there, but also to help educate the public about the medical and life sciences. The intent of this article is to introduce SOF medics to a unique opportunity to enrich their medical knowledge and gain cultural appreciation of the Thai way of life.

Songkran Niyomsane Forensic Medicine Museum

The Forensic Medicine Museum is both a working classroom and odditorium of public interest. Upon ascending the stairwell, visitors are greeted by the hanging skeleton of museum founder Professor Songkran Niyomsane, a passionate man of anatomical science who swore that his students would memorize all 206 bones of the adult human body if it was the last thing he ever did.



Many Thais refer to this museum as “Si Oueys’ place” because of its main attraction, the mummy of Si Ouey Sae Ung. Si Ouey was a migrant Chinese worker in Thailand who killed at least eight young boys and ate their internal organs in the belief that it would give him immortality. In a way it did since after his execution in the late 1950s he has become an urban legend in his own right and as Bangkok’s Boogeyman his memory lives on. There is even some planning currently underway to write a book and produce a movie about him. After execution by machine gunfire, his corpse was pseudo-preserved with paraffin and formaldehyde but underwent mummification and turned a cockroach brown color. He now stands naked and upright in a glass case with a drip pan under his feet, losing face and doing penitence on public display in the afterlife.



Executed rapist and murderer doing hard time in the afterlife at Siriraj.



Si Ouey--The man, the myth, the mummy.
Gone but not forgotten.

caught, the eventual buyer said that he kept the fetuses in a bag and praying to them everyday helped him win lottery prizes and get money back from debtors. Thai folklore has many tales in which the ghosts of dead fetuses bring power and good fortune to their possessors. Because of this strange theft, many of the fetuses that were on shelves for open display for decades have now been put behind glass panes. The hospital may also have to start charging admission soon to pay for better security.

Although Si Ouey is the star attraction for most tourists, the autopsy tools used on King Rama VIII, the elder brother of the reigning king of Thailand, is considered by the Thais to be the most important exhibit in

Si Ouey is kept company by a few rapists and murderers who are similarly preserved and displayed. There is also one unclaimed body that had undergone natural mummification before being found. None of these mummies underwent the exotic treatment associated with Egyptian mummies or the careful lifelike preservation seen in Eva "Evita" Peron or communist leader Lenin before they were put on public display. Instead, the mummies have a unique appearance that you are not likely to see elsewhere in the world.



this After recent thefts, many of these "lucky fetuses" have been placed behind a glass display window.



Si Ouey and friends

Next to the mummies are several macabre displays of preserved fetuses and infants with unusual deformities. Thais tend to be quite superstitious, especially so in regards to getting good luck in financial matters such as gambling and business. Earlier this year an antique dealer hired teenagers to steal skulls and preserved fetuses from the forensics museum for use in black magic rituals.² After being

museum. To understand why, one must realize that their American born king, His Majesty King Bhumibol Adulyadej, Rama IX of Thailand, is the longest reigning monarch in the world and is venerated like a living god. The assassination of his elder brother forever changed Thai history. Note bene: The king personifies many of the things that make the Thais such a great people. Never speak disrespectfully of the King or royal family in front of Thai people, not even jokingly!

The rest of the museum should be interesting to CSI fans. Next to the autopsy tools are several skulls with bullet holes in the forehead. They come from unclaimed bodies that were used in a forensics investigation into the cause of King Rama VIII's death, which had been staged to look like a suicide.

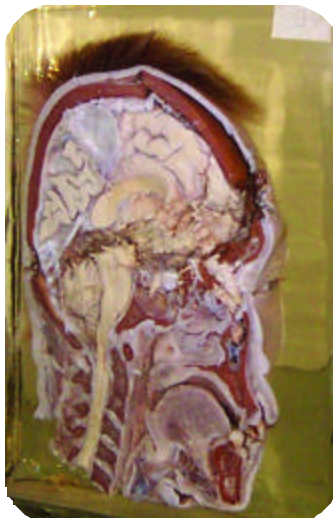


Display of skulls with bullet holes used in a forensic study following the assassination of King Rama VIII in 1946

The locals don't usually spend much time looking at this display, however. Although 95% of Thais are Buddhists, almost all believe in ghosts and that people's spirits may reside for some time around their old body parts such as the skull.

Two walls are plastered with pictures of crime scenes with traumatic deaths that a SOF medic should be aware of: hand grenade wounds, shootings, hangings, strangulation, stabbings, burns, electrocution, suffocation, landmines injuries, etc. Thais are openly fascinated with death and commonly put grisly crime scene or autopsy photos such as these on the front page of their newspapers or even on poster displays that may be seen in ultramodern department stores.

The rest of this museum is full of display cases with body parts that have been damaged from injuries and disease. These include lungs with paraquat poisoning, traumatic amputations of two forearms with Chinese style tattoos, amputated legs and feet, and an interesting mid-sagittal dissection of a head depicting the trajectory path of a bullet passing from the front to back of the skull and revealing damage to skin, brain, and bones



This place is definitely not for the squeamish so be careful about who you take with you. Many Thais refuse to go here because of its scary reputation or because they know people who went and had nightmares afterwards.

Mid-sagittal section of a head showing bullet trajectory and damage.

However, don't be surprised to see little children wandering around. After finishing a hospital appointment, many Thais will take their children and grandchildren to this museum to scare the devil out of them and show what can happen if they talk to strangers or don't behave well. Although they may be psychologically traumatized for years after their experience, the end may well justify the means since most Thai children are very well behaved when compared to their western counterparts.

Congdon Anatomical Museum

"Begin your anatomy with a man fully grown; then show him elderly and less muscular; then go on to strip him stage by stage right down to the bones. And you should afterward make the child so as to show the womb." Leonardo da Vinci (1452-1519)

In the Congdon Museum, anatomy displays abound for every stage of human development from conception to death, and of every organ system in the body right down to the bones. Several fetuses are displayed still in the womb.

Red and blue latex injected into veins and arteries demonstrate circulatory systems on several models. Next to an impressive standing display of a completely dissected human circulatory system with all the major arteries and veins is an even more impressive standing display of a complete human nervous system with all of the central nervous system and major nerves of the peripheral nervous system intact. Small pieces of the peripheral nervous system end organ tissues such as fingertips were left attached to make identification of the peripheral nerves easier. The amount of time and skill that were required to complete this display without tearing any of the major nerves is a tribute to the anatomist's art.

Speaking of art, don't expect anything like the plastinated bodies at Professor Gunther von Hagens Body Worlds displays in Europe or the Musee Fragonnard in Paris. The displays here were made strictly for medical education and not public entertainment.



Display case from the forensic medical museum.



Gastroschisis



Thais place toy presents next to all the fetuses and stillborn infants as signs of condolence and respect, wishing them better luck in the next cycle of rebirth.



dead infants and children by attitude and gestures. They also place symbolic items next to them such as flowers, candy, and even gender-specific toys, perhaps to humanize them or to wish them better luck in the next incarnation.

Male and female cadavers thoughtfully dissected lay side-by-side revealing somewhat complimentary views of muscles, viscera, and genitals. A similarly dissected male torso stands upright nearby. Unlike the preserved babies, the adult cadavers and skeletons have no symbolic objects next to them such as toys, candy, or flowers. However, medical students may make the prayer-like “Wai” gesture before them and address them as “teacher” or “headmaster.”

In the osteology or arthrology room, many of the exhibits actually were teachers or headmasters of the hospital’s faculty. Their skeletons are displayed upright in glass cases with a picture of them while they were still alive. It is interesting to look for the facial and dental features of the skeleton and compare them with the pictures. This room houses several other bone displays including the skeleton of a giant, a dwarf, and someone with a severe deformity that caused the long bones to be markedly bent and crooked.

Like the forensics museum, the Congdon Anatomical Museum is another place Thais may take their children to scare or shock them into better behavior. It is well suited for this task due to the startling displays that put the “gross” in gross anatomy. The hot and humid air, dusty displays, and creaky old wood floors only add to the scare factor.

Parasitology Museum

For most North American healthcare providers, knowledge gained from taking parasitology courses is soon forgotten because we seldom see tropical diseases or the parasites that cause many of them. However, our Thai counterparts commonly encounter these illnesses and therefore must remain proficient in their diagnosis and treatment.

Other displays show human development from the embryonic stage to the fetus and abnormalities of development in utero. There are half a dozen conjoined twins of various types, a two headed baby, anencephalic infants, and stillborns with conditions such as ectopia cordis, gastroschisis, and congenital absence of external ears from an unspecified cause. A six-year old girl with internal hydrocephalus and a quarter section of her markedly enlarged head removed for better viewing stands next to a window, looking hauntingly serene and much like an alien from a Steven Spielberg film.

It is always a tragedy when children’s lives are ended before they ever had a chance to start. Out of compassion, Thais show great respect to all these



Life cycle of liver flukes displayed in the parasitology museum

The parasitology museum is an effective tool for teaching tropical medicine that takes advantage of the “picture is worth a thousand words” approach. Its many excellent large scale models and illustrations of parasites of medical and veterinary importance in Thailand leaves a more lasting visual impression than a student would get from just looking at 2-D pictures and illustrations in a parasitology book. It would be nice to see these in US military institutions that teach tropical medicine courses such as the Uniformed Services University of the Health Sciences, Academy of Health Sciences, US Air Force School of Aviation Medicine, or even the Special Warfare Center and School.

Scale models of rural villages depict the life cycles of parasites as well as behavioral risk factors that make humans susceptible to infection. Unfortunately for us, the placards on many of these models are written only in Thai script so that we may only recognize the Latin or scientific names of the organisms.

Other displays focus on the poisonous animals and insects of Thailand, though these static displays are not nearly as interesting as seeing live scorpions and serpents at the snake farms and shows commonly found in heavy tourist areas such as Bangkok, Pattaya, or Phuket. Several mounts show internal organs damaged by parasites. Others have preserved nematodes such as whipworms, pinworms, roundworms, tapeworms, and liver flukes. Don’t look for parasitic twins here, though; they can be found next door at the Ellis Pathology Museum.

Ellis Pathology Museum

The first thing one sees upon entering the doors of this small museum is a display case with one of the world’s largest scrotums. A picture on the side of the display case shows the scrotum’s former owner with elephantiasis of the leg and genitals secondary to Bancroftian filariasis, one of six diseases the WHO is trying to eradicate from the face of the planet in the next 20 years.

Other unusual exhibits include three pairs of conjoined twins. Since they come from the country formerly known as Siam, the term Siamese twins may still be appropriate. Combined with the specimens in the forensics and anatomy museums, this is probably the largest collection of conjoined twins in the world. Here they are on display with other fetuses floating in formaldehyde showing what can go drastically wrong during the fragile developmental period in utero, such as Trisomy 18 (Edward’s syndrome), Potter’s syndrome, congenital megacolon, and hydrocephalus. As in the other museums, these stillborns are shown great respect. Even a plastic medical model of a fetus with birth defects is surrounded by toys and candy.

Less shocking are the more mundane displays of cancerous and diseased organs and tissues in plastamount blocks. Displayed tumors include lym-



A liver with alcoholic cirrhosis is one of the many pathologic organ specimens on display.

phoma, sarcoma, adenocarcinoma, seminoma, and astrocytoma. Pathological organs and tissues include a dissecting aortic aneurysm, polycystic kidneys, myocardial infarctions, subdural hematomas, Arnold-Chiari malformation, and others.

To get the most from visiting this small museum consider bringing a pathology reference such as the “Pocket Robbins.”³ It will help to cross-reference the eponymic and scientific names used

here and list identifying characteristics to look for in the specimens.

Ouay Ketusingh Museum of History of Thai Medicine

A trip to Bangkok would not be complete without getting a traditional Thai massage. Thai massage is now very popular and known worldwide for its rejuvenating effects on both the body and mind. Likewise, a trip to Siriraj would not be complete without a short visit to the Museum of History of Thai Medicine. Here, several mannequins and displays portray the use of ancient oriental medical modalities



Apothecary tools used in Thai traditional medicine

used throughout the life spectrum in birth, aging, illness, and dying. They also display the evolution of medicine in old Thailand (Siam) from when witch doctors performed rituals and gave potions, to the history of the modern medical training at Siriraj, which is Thailand's oldest hospital and part of Mahidol University School of Medicine.

Although Thai physicians are trained in English using the most modern textbooks and curriculum, they also realize the value of studying the old ways that are still widely practiced. The traditional approaches that still remain popular are those that have holistic appeal and treat not only the body,



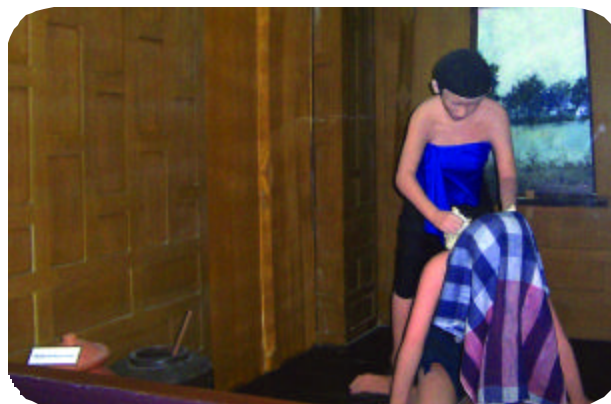
Midwives and rural birth depicted in the Museum of History of Thai Medicine.

but also try to achieve balance and well being with the mind and soul. Rituals performed are not only for the benefit of the patient, but for family and friends as well. As allopathic western medicine was adopted in Thailand, many traditional medical practices still

remained popular as prophylactic or adjunctive treatments to supplement modern medical practices.

The museum has displays of rural midwifery, birthing practices, and death rituals. Exhibits also show healing foods, herbal medicines, potions, and apothecary instruments that helped give birth to the modern sciences of nutrition and pharmacy. Many SOF personnel still actively use oriental herbal supplements and buy heavily into pharmaceutical pseudoscience in order to gain even minor increases in physical stamina, or other achieve various other health claims. Another example of how the more things change, the more they stay the same.

Perhaps some day in the not so distant future a museum will be built depicting the primitive, superstitious, and even barbaric medical treatments of the 20th century. If so, I'm sure that the healing touch of



Thai traditional massage is used as an adjunctive treatment.

traditional Thai massage will still be just as popular then as it is today.

Sood Sangvichien Prehistoric Museum & Laboratory

This is certainly the least seen museum in the complex and visitors will usually have to ask to have a custodian open it for a special viewing. It is also the least interesting from a medical perspective, as it is not about the health sciences, but evolutionary biology. What makes it interesting from that perspective though, is that it tries to explain who we are, how we got here, and how we fit into the big picture of life on earth. If you are short on time you may wish to put this museum off until the last.

The museum has two sections. The first section is devoted to the evolutionary history of life on earth and has charts and fossil displays showing the various branches of the animal kingdom and evolutionary paths. The second section is devoted to the

evolution of *Homo sapien sapien* from our less cerebral primate ancestors and uses charts, fossils, and various artifacts to depict the timelines.

Summary:

As classrooms and laboratories of a modern medical school that are open to the public, the Siriraj Hospital medical museums provide an excellent educational diversion for SOF medics transiting Bangkok to bone up on their anatomy and other health sciences while gaining an appreciation of Thai culture and history. As working classrooms, these museums are not geared for attracting tourists or making a profit. They lack placards written in English and many of the amenities they could have with a bigger budget. But part of the appeal is that the museums are primarily for the benefit of medical students and being free to the general public is just an added bonus – something the Thais may take for granted, but I know of no other medical schools in the wealthy west that have a similar policy.

Like many of the best things in life, admission is free, but donations are highly needed and appreciated. The museums may be closed on some Thai holidays, but usual hours of operation are M-F from 0900-1600. Some museums are closed from 1200-1300 for lunch.

Getting there can be a fun part of the cultural experience. As in Venice, Bangkok residents made extensive use of the rivers and canals for transit and it is still the best way to get to the hospital which is located across the Chao Phraya River in Thonburi. Visitors in the old part of Bangkok can walk two blocks from the Grand Palace and take a river ferry from the Tha Chang pier to the Wang Lang or Siriraj pier for only five cents. The hospital is only one block away and is easy to identify because of the nursing and medical students walking around in uniforms. Visitors not near the old city can take the sky-train south to Saphan Taksin Station and walk 125 meters down to the Sathorn Pier below the King Taksin Bridge. From there take a scenic 50-cent ferryboat trip up the river to Siriraj Pier N10. After arriving at the pier just show a picture of Si Ouey or ask a Thai where Siriraj Hospital or Si Ouey's place is for further directions.

The website for the Siriraj Hospital Museums is:
<http://www.si.mahidol.ac.th/eng/Museums.htm#>



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REFERENCES:

1. Hippocrates (c. 460–370 B.C.). Aphorisms, aph 1.
2. Wassayos Ngamkham. Foetuses stolen for “good luck” Bangkok Post General News - Saturday 15 February 2003
3. Stanley L. Robbins et al. Pocket Companion to Robbins Pathologic Basis of Disease W. B. Saunders; 6th edition (August 15, 1999) ISBN: 0721678599



**USSOCOM Biomedical Initiatives
Steering Committee (BISC)
Biomedical Research and Development**

Update:

Mr Bob Clayton

WANTED!



The Fibrin Dressings are no longer to be used in the field (Fibrin Dressing is packaged in a hard plastic container inside a foil pouch). They have been replaced with the Chitosan Dressing (NSN 6510-01-502-6938) (thin OD Green package). Fibrin Dressings were only authorized for use under an Investigational New Drug (IND) protocol, which is closely monitored by the Food and Drug Administration (FDA). Stringent criteria concerning the use of this device was established to collect the data necessary for the Fibrin Dressing to be FDA approved. The data and associated information needs to be refined before this bandage is to be used outside of the IND protocols.

As of this time there are about 425 of these devices that are still unaccounted for or that have not been turned in. If you have or know of the location of any Fibrin Dressings, return them to your medical supply system and draw the Chitosan Dressing (contact your component Surgeon's Office for procedure). The efficacy and safety of the FDA approved Chitosan have proven to be equal to the Fibrin. If you are in possession of a Fibrin Dressing, return the dressing to your Component or HQ USSOCOM (address of the Journal) and we'll make sure they are shipped to the Institute for Surgical Research (ISR).

Please note that use of the Fibrin Dressings could result in serious consequences since such use would not comply with the FDA guidance. If you are not sure which bandages you have, contact anyone in the USSOCOM Surgeon's Office; they will be glad to assist you.

The USSOCOM Biomedical Initiatives Steering Committee (BISC) held the 4th Quarter FY03 meeting in conjunction with the Advanced Technology Applications for Combat Casualty Care (ATACCC). The US Army Medical Research and Materiel Command sponsors ATACCC; this year's meeting was an amplification of the lessons learned from Operation Enduring Freedom, Operation Iraqi Freedom, and other adventures in the War on Global Terrorism. As each of you know, Special Operations has played a significant role and, from the medical perspective, has led the way in developing Combat Casualty Care (CCC) protocols and procedures that are now being institutionalized in both conventional forces as well as in the civilian first responder roles.

Based upon the emerging information and feedback, the investments (program funding) that have been made by the USSOCOM Biomedical Initiatives Steering Committee (BISC) over the past few years have begun to pay off. Combat Casualty

Care issues that have been stressed both in training, protocol development, and equipment were finally put to the test. Not all of the initiatives received a 100% success, but it gives us a baseline on what needs to be improved.

The BISC competes for funding. Our track record has been good because we attempted to provide the SOF medics tools to enhance their capabilities and save lives of our number one resource--the SOF warrior.

The BISC and the USSOCOM Medical Technology (MEDTECH) Program is constantly looking for ways to provide the SOF medic enhanced techniques that are applied to CCC, as well as ways to improve the skills and techniques that are related to Preventative Medicine and other health issues. New technologies are being investigated in the following areas:

Lightweight Oxygen Concentrators--

Providing 3-5 liters per minute, battery operated, 14

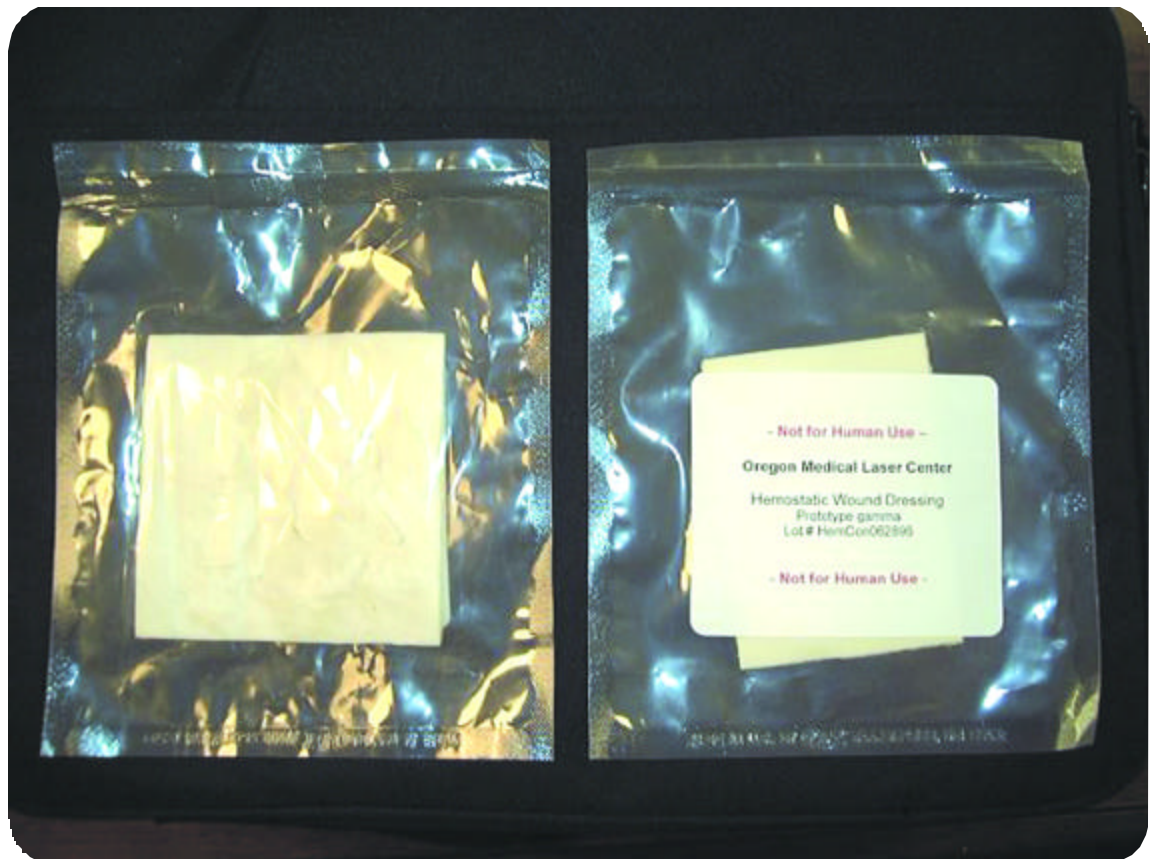
pounds with a target weight of under 8 pounds. This technology will eliminate the need to carry oxygen bottles and the additional burden of recharging them.

Emergency Airway Device-- Investigating the development of new emergency airway device. Currently this technical approach is proprietary, but will be discussed in a later journal article.

Improved One Handed Tourniquet-- Investigation to develop/design a more efficient tourniquet, looking at lighter materials, finite adjustment, and effectiveness.

SO Micro Labs-- Investigation into the development of a lightweight lab set that requires no environmental/storage constraints and provides a rapid assay for far forward use.

The BISC is meeting on 11 and 12 December in Tampa, Florida. Component Surgeons will meet and nominate projects for FY05 funding. If you have ideas or suggestions that will assist you in completing your medical mission, get with your Command Surgeon and bring your ideas to the table.



This is the Chitosan Dressing! It is the **ONLY** hemostatic dressing authorized for use in SOF.

HANDS-ON SOF MEDICINE: PREVENTION, RELIEF, AND REHABILITATION OF BACK PAIN

Richard Gamble, 18D

ABSTRACT:

The shift in the current medical paradigm of “symptom-chasing” to the more powerful one of wholism (considering the entire organism when attempting cure) is changing medicine. A structural approach to prevention, relief, and rehabilitation of soft-tissue injuries offers the SOF medic new tools and strategies to effect lasting change while minimizing the necessity for drugs and surgery.

INTRODUCTION:

Strategies for the traditionally different problems of prevention, relief, and rehabilitation of back pain are actually similar when considering the structure as a whole. First, attempt to create balance within the structure using knowledge of fascial properties and patterns. Second, incorporate this balance into the structure in a lasting way. Third, establish a program of specific stretching and strengthening (and manual therapy if required) to help the body to maintain the balance. Last, assess the individual’s beliefs about training, structure, and tone, and educate him accordingly.

Creating balance

Balance implies evenness of tone, which requires the joints and girdles to be as horizontal as possible, and the spine and legs to be as vertical as possible. The ideal alignment is a body in which a vertical line passes through the ears, shoulders, greater trochanters, knees, and lateral malleoli, with the pelvic and pectoral girdles horizontal. Any shift away from this ideal (Figure 1) forces the body to work harder to maintain an upright posture, and the tone will be uneven. This relationship is reciprocal: An imbalance in tone secondary to compensations for injury, imbalanced weight training, or other specific activities can pull the body off balance, and an off-balance body caused by fascial restrictions causes an imbalance in tone.

Impediments to balance: “locked short” and “locked long”

Muscles are designed to contract and relax in

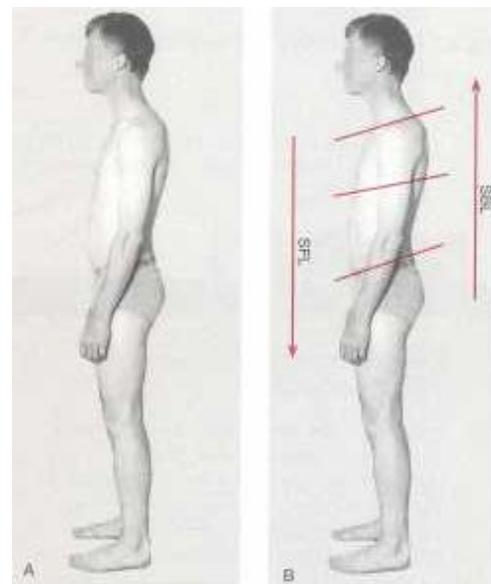


Figure 1 – Structural Imbalance

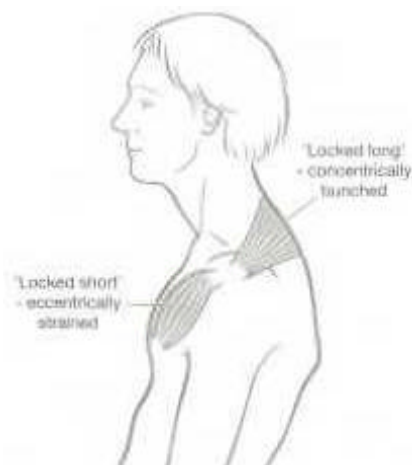


Figure 2 – Locked short/Locked long

succession, but muscles being asked to continually support postural imbalances remain under continual strain, creating a piezo-electric charge that runs through the fascia within and around the muscle. This charge causes fibroblasts to lay down extra collagen along the myofascial unit to support the additional strain. When this new tissue is formed while the structure is chronically shortened, the tissue supports the shortness and locks it in place.

“When body segments are pulled out of place and muscles are required to keep static positions – either stretched/contracted (‘locked long’) or shortened/contracted (‘locked short’) – then we see increased fascial bonding and thixotropy of the surrounding extracellular matrix.”¹ (Figure 2)

Chronic shortness in the myofascial units on one side of a joint causes a reciprocal lengthening on the other side. This length is accompanied by a constant strain to keep the structure in balance, which causes collagen fiber to be laid down in the lengthened myofascial unit. It is often the lengthened “locked long” side that experiences the most pain, as it is being held in eccentric contraction. An area that is frozen into immobility by being “locked short” and “locked long” on opposite sides is in “contracture.” A good therapeutic rule of thumb: *Treat the painful area, but do not ignore the antagonist muscle group that is often “locked short.”*²

Contracture not only has the effect of compressing the joints, but also soft tissues as well, including vessels and nerves. Compression of these structures may interfere with circulation and cause numbness or pain distally, and locally cause pain and dysfunction from ischemia and the accumulation of toxic metabolites.

Creating a balanced relationship among myofascial units

There are several ways to establish and maintain balance. A structural analysis of the body will offer insight into where to begin.³ This analysis is simplified by dividing the body’s support into myofascial continuities. Thomas Myers’ Anatomy Trains model of the fascial continuities is a useful tool to aid in analysis and treatment.

Each myofascial continuity (or *anatomy train*) governs a different function of the body’s structure: flexion, extension, lateral bending, etc. Forward flexion is governed superficially by the *superficial front line* (SFL – Figure 3) and deeply by the *deep front line* (DFL – Figure 4). Extension is

governed by the *superficial back line* (SBL – Figure 5) and the deep lateral rotators of the femur. Lateral bending (and communication between the fascia of flexors and extensors) is governed by the *lateral lines* (LL – Figure 6). Shortness or restriction in one area of a continuity can create tension elsewhere along that continuity, and a resulting tightness in the opposing continuity.



Figure 3 – Superficial Front Line



Figure 4 – Deep Front Line



Figure 5 – Superficial Back Line



Figure 6 – Lateral Line

Considering restrictions and shortness

Fascial restrictions are areas where the fascial sheaths of different myofascial units become adhered to one another. These adhesions can occur between muscles of similar function (quadriceps), opposing functions (quadriceps and hamstrings), muscles and the subcutaneous fascia, and muscles and the periosteum. Fascial restrictions are identified where individual muscles are not easily differ-

entiated from one another by palpation, where the skin does not move over the underlying tissue or cannot be lifted away, or the muscles seem stuck to the bone. Intermuscular septums are often areas of great adhesion, such as the anterior and posterior septums of the thigh surrounding the adductors.

Seldom in my experience is shortness found without fascial adhesions. It is important to attempt to create length along shortened areas of an Anatomy Train, but releasing the fascial restrictions will often “create” length. Assess the entire body for restrictions: often a painful area or recurrent pattern can be affected by restrictions in a painless area some distance away, much like a snag in a sweater’s fabric causes tightness in unexpected places.



Figure 7 – Fascial Web

Taking it home: Self-help

The information obtained from structural analysis is combined with knowledge of the individual’s exercise regimen to tailor a strengthening and flexibility program. If the individual’s exercise program emphasizes the flexors primarily, incorporating strengthening exercises for the extensors is necessary. Stretching techniques for the entire body should be started, emphasizing areas of shortness and striving to horizontalize the joints and girdles. Lengthening the SFL and DFL, specifically the hip flexors (rectus femoris, psoas, and iliacus) and the rectus abdominus, have great potential to create balance in the spine as they cause anterior flexion and are neglected in many flexibility programs. Manual techniques to lengthen and differentiate myofascial units are more useful than stretching and strengthening alone and can speed the process considerably, if the individual has access to a skilled practitioner.⁴

Creating lasting structural change

For any change in myofascial units to be lasting, the resulting change must be integrated into the

“body image.”⁵ The mind will unconsciously attempt to stop the body from positions or movements that have been previously unavailable to it. This is the effect of “muscle memory,” the body’s habitual movement patterns. Movement education and stretching are a two methods of incorporating therapeutic changes into the body image.

*Working manually to elongate myofascial units or continuities is generally quicker and more specific than stretching, although the same results can often be achieved over time. Manual therapy can be uncomfortable, but should not be painful (determined by an actual or perceived motor response to withdraw from pain). Feelings of soreness or a burning sensation are normal for fascial stretching--sharp pain should be avoided. Parasthesia, tingling, and numbness should also be avoided.*⁶

TREATMENT TIPS

- ~ Rule out underlying pathology first
- ~ Avoid sharp pain, numbness, or parasthesias
- ~ Start at the feet and work towards the head, or start at the middle and work outwards, or address the fascial restrictions in order of significance

Once the body has reached greater balance and ease, and these changes have been integrated into the body image, the same stretching and strengthening exercises can be used, now emphasizing the maintenance of flexibility and keeping the balance.

Our Challenge as Medics

The SOF community’s emphasis on fitness often leads to confusion concerning obvious tonus and functional strength. An individual might have “six-pack abs” and do well at physical training, but only be utilizing a fraction of his potential functional strength while courting both short and long-term injuries in our unforgiving training environment. Education is the key to changing our institutional mindset, which I believe leads to so many of our injuries. Achieving true balance and flexibility involves changing our bodies *and* our thinking.

SUMMARY

The effect of the structure of the body on back pain is often ignored in prevention, pain relief, and rehabilitation. Obtaining and maintaining structural balance can prevent an operator from becoming

an operational liability. The role that the myofascial units of the trunk play in maintaining upright posture is important to understand for a well-rounded approach to back pain and therapy in general.



Richard D. Gamble, BSME, 18D is an SOCM Trauma Instructor at the JSOMTC at Ft Bragg, NC. He received a Bachelor of Science in Mechanical Engineering from Rose-Hulman Institute of Technology. He is a Kinesis

Myofascial Integration Practitioner, practicing Thomas Myers’ interpretation of Dr. Ida Rolf’s 10-Session Structural Integration series. He is also an Intermediate Practitioner of John Barnes’ Myofascial Release and a Licensed Massage Therapist in North Carolina. He entered the Army in 1993 and served 7 years on active duty, first as an Aeroscout Observer assigned to the 2/17 Cavalry and later as a Special Forces Medic at the 3rd SFG (A). After active duty, he joined the 20th SFG (A) as a Senior Medic and was mobilized in December 2001 to D/4/1 SWTG (A). He can be contacted by email at gambler@soc.mil.

REFERENCES

1. Myers, Thomas W., *The Anatomy Trains*, Churchill Livingstone, Inc, January 2001. p 18
2. Rolf, Ida P., *Rolfing: Reestablishing the Natural Alignment & Structural Integration of the Human Body for Vitality and Well-Being*, Inner Traditions International, Limited, September 1989. Pg 69
3. Structural Analysis, Visual Standing Analysis, and Body Reading are synonymous terms. They describe the analysis of a person’s structure to determine fascial restrictions that are pulling the body out of its easiest potential alignment with the gravity field.
4. Manual therapy techniques are easily learned hands-on skills, but difficult to offer understandably in print, and therefore beyond the scope of this article. For more info consult Thomas Myers’ *Anatomy Trains*, John Barnes’ *Myofascial Release*, or any one of several texts or seminars on the subject.
5. Dr. Moshe Feldenkrais’ elegant *Awareness Through Movement*[®] lessons are a method of developing the “body image.” Dr. Milton Trager, creator of *The Trager Approach*[®] and *Mentastics*[®], is another such movement innovator.
6. Dr. Ida Rolf, Thomas Myers, John Barnes, and several other pioneers in working with the myofascia have repeatedly created lasting changes in the structure of the body in a short time. The strategies discussed in this article are a condensation of their theories and techniques.

MEDICAL IMPLICATIONS OF HIGH ALTITUDE COMBAT

Lester W. Grau, LTC (Ret) and William A. Jorgensen, DO

ABSTRACT:

In high-altitude combat, the primary enemies are the weather and terrain; the fellow shooting at you is further down the threat list. The physician cannot be everywhere and, when ground forces are engaged at elevations over 10,000 feet high, the accompanying medic and unit leadership will play primary roles in survival and success. Screening, training, acclimatization, and frequent rotation can help overcome some challenges, but special measures are still needed to prevent, treat, and evacuate high-altitude casualties. Other armies have successfully fought at high-altitude for years. Our army can do the same, provided it takes advantage of other nations' experience.

The views expressed in this article are those of the authors and do not reflect the official policy or position of the United States Army, United States Special Operations Command, Department of Defense or the US Government.

The fact that a piece of land is inaccessible, uninhabitable, or of little practical value is no guarantee that nations will not fight over it. Long, bloody wars have been fought and are being fought for inhospitable mountain real estate located between 10,000 and 23,000 feet [3050 and 7015 meters] in elevation. Examples of such high altitude combat include the 1953-1974 Chinese invasion of Tibet and subsequent guerrilla war, the 1953-1958 Mau-Mau rebellion where British troops fought rebels in the Aberdares mountains of Kenya, the 1962 Sino-Indian War in the Himalayan mountains bordering Bhutan and Tibet, Soviet-Mujahideen combat in Afghanistan's Hindu Kush mountains from 1979 to 1989, the Peruvian government's clashes with *Sendero Luminoso* guerrillas in the Andes throughout the 1980s and the Indo-Pakistan continuing conflict over the ownership of the Siachen glacier which began in April 1984. Recent (1999) Indo-Pakistani clashes in the Kargil area of disputed Kashmir again demonstrate that high altitude combat is often contemporary combat. Tens of thousands of combatants have perished in inhospitable ice, snow, and rock while battling for national prestige, water rights, survival, or geographic positioning. The United States Army has not had to fight at such altitudes, but with the war on terror, the possibility of

United States military commitment to such areas is not all that remote. Operation Anaconda in Afghanistan is the highest altitude ground fight [10,500 feet] in US history. Since the United States Army is still inexperienced fighting at these altitudes, it should draw from the experience of others. There are some distinct medical problems that medical personnel should plan for in the event of a high-altitude contingency operation.

HIGH-ALTITUDE MEDICAL CONSIDERATIONS

The world's highest mountains are in the Himalayan and Karakoram mountain chains of Asia. The Himalayan Mount Everest towers at 29,028 feet [8,853.5 meters] whereas the highest point in the United States, Mount McKinley in Alaska, is 20,320 feet [6,197.6 meters]. The highest point in the Colorado Rockies is Mount Elbert at 14,433 feet [4,402.1 meters]. The highest point in the European Alps is Mont Blanc at 15,771 feet [4,810.2 meters].¹ Man is not naturally designed to live and work at these high altitudes. Anytime a person travels to an altitude of 8,000-10,000 feet [2440-3050 meters] or higher, the atmospheric changes in pressure and available oxygen cause physiological changes which

attempt to ensure that the body gets enough oxygen.² These physiological changes are pronounced among mountain peoples, who have lived in the cold and higher altitudes for generations. Their bodies are short, squat, stocky, and barrel-chested compared to those of lowlanders, and their hands and feet are stubby. Their hearts are bigger and their bodies contain 20% more red blood cells. Their red blood cells are larger than those of lowlanders. Their heartbeat is slower and their capillaries are wider. The alveoli in their lungs are more open for oxygen absorption. Many develop a fatty epithelial pouch around the eyes to counteract cataract and snow blindness.³

High altitudes are characterized by extreme cold, strong winds, "thin" air, intense solar and ultraviolet radiation, and rapidly changing weather including severe storms which can cut off contact for a week or longer. Personnel should be screened and acclimatized before deploying to high altitudes since these conditions at high altitude are usually more dangerous than enemy fire. Medical personnel should prepare for the special demands of high altitude treatment and care. Bullet and shrapnel wounds, which normally are not serious, can quickly prove fatal at altitude. Movement in the high mountains often results in broken bones, severe lacerations and contusions, and internal injuries caused by falls and falling rock. Frostbite and hypothermia are a constant danger. Acute mountain sickness, high altitude pulmonary edema, and cerebral edema are frequently fatal consequences of working at high altitude. Mental and physical abilities decrease at high altitude and high altitude also induces personality disorders. Sudden weight loss is often a problem. The rarefied atmosphere permits increased ultraviolet ray exposure that creates problems with sunburn and snow blindness. High-altitude shelter heating is often by unvented kerosene stoves, which means that personnel breathe air that is thick with soot. Medical personnel will be exposed to the same dangers of working in high altitudes and much of their normal medical equipment will not function, or function effectively, at high altitudes. For example, hospital generators and vehicles are often diesel-powered. Diesel engines lose efficiency at 10,000 feet [3050 meters] and eventually do not work at all due to the thinness of oxygen at higher elevations. Helicopters cannot haul heavy loads over 13,000 feet [3965 meters] as their rotors lack thick enough air to "bite" into. Altitude requires additional animal or gasoline-fueled overland transport, which adds to the physical demands and logistic requirements of medical sup-

port in this environment.

SCREENING AND ACCLIMATIZATION

At high altitude, there is less oxygen and atmospheric pressure. The soldiers selected for high-altitude duty should be screened for their ability to function in this environment. Soldiers should be in excellent physical condition and have sound hearts and lungs. Short, wiry soldiers are preferable to tall, over-muscled soldiers. Selected soldiers should possess a higher level of intelligence in order to allow them to more-readily adapt to the trying terrain.⁴ Personnel who have had radial keratotomy (RK) corrective eye surgery should not go "to altitude" as their vision may permanently cloud. Personnel records should be screened for previous high-altitude sickness. Some personnel can be administered acetazolamide (Diamox) prophylaxis; however, personnel with sulfa allergy or G6PD deficiency cannot use acetazolamide. Personnel with the sickle cell trait should be excluded since rapid exposure and dehydration could set them up for splenic syndrome. Further, certain medications (i.e., any benzodiazepine such as valium) inhibit acclimatization and personnel using these should be carefully evaluated.⁵

All personnel should undergo an acclimatization program to accustom them to their new environment and to improve their respiratory and cardiovascular systems. A physically fit soldier can adapt to the cold in about three weeks.⁴ Experience further shows that the body normally adapts to a new altitude in about two weeks time. During the acclimatization phase, the body accumulates additional red blood cells which help transport needed oxygen.² The Pakistani Army acclimates their personnel over a seven-week cycle. They begin with a three-week stay at 10,000 feet [3050 meters], where personnel acclimate to the cold while they undergo daily physical conditioning, and learn mountaineering, rock climbing, rope rappelling, and mountain survival. During the final four weeks, the soldiers learn advanced mountaineering techniques, trek to 14,000 feet [4270 meters], return and trek to 17,000 feet [5185 meters] and then return, and finally trek to 19,135 feet [5836 meters].^{3,4} Despite all training and efforts, acclimatization is not possible at heights over 18,000 feet [5418 meters] so personnel exposure at these heights must be limited and closely supervised.⁶

Medical personnel should advise logisticians and planners on special considerations for high altitude combat. For example, lightweight, pre-cooked,

high-caloric rations that are high on carbohydrates are essential and aid acclimatization. Supplementary candy and soups will help offset the inevitable loss of appetite at altitude. Boiling water from snow for purification takes an unwarranted amount of fuel and so provisions have to be made to provide water or water purification equipment to the soldiers "at altitude" where dehydration is a constant threat. NCOs need to "push water" to compensate for the diuretic effects of acclimatization. Troops working above 15,000 feet should be issued pressurized sleeping bags. These bags, which are inflated with a foot pump, have been tested to provide equivalent pressure of 8370 feet [2550 meters] while at 13,600 feet [4150 meters].^{4,5} Medical personnel should further recommend a rotation program where highest-altitude exposure is limited to ten to fourteen day increments.

During the Soviet-Afghan War, Soviet doctors and physicians assistants often accompanied small units on high-altitude missions, since the patients required immediate medical care and evacuation (medevac) took too long to save many patients.⁷ Limited medical staffing in the US Army will prevent many doctors and physicians assistants from accompanying the high-altitude patrols. Therefore, the brunt of the responsibility for saving injured and sick soldiers will fall on the combat medic. In addition to the medic's normal skills, he will need to be trained in mountain rescue techniques, treatment of altitude-specific medical problems, and high-altitude medevac procedures. The medic should accompany the unit during the acclimatization process and rotate in and out of the high-altitude area with the unit.

In an emergency, Diamox (acetazolamide) can be given to nonacclimated personnel (125mg twice a day) starting the day before ascent and up to two days after ascent. However, this is an emergency measure that should only be used for a forced ascent to over 10,000 feet in one day. Normal acclimatization is preferable. There are side effects to Diamox, such as peripheral paresthesias (numbness in the extremities) and bone marrow suppression. The possibility of bone marrow suppression is relatively rare, but cannot be ignored.⁵

FROSTBITE

Frostbite is the most common injury at altitude. Frostbite is a continual danger, but especially so following any exertion. Sweat rapidly freezes around the toes and fingers. Frostbite may be classi-

fied as frostnip, superficial frostbite, or deep frostbite, depending on the severity of the case. Frostnip usually occurs on the tips of the ears, nose, fingers, toes, and cheeks and is noticeable as a whitening of the skin. Simple warming of the area is usually sufficient treatment. If it advances to superficial frostbite, the affected areas will be firm and have a white waxy appearance. Warming and gentle massaging of the area are the necessary treatment. As the area rewarms, it may turn a mottled blue or purple and swell. Nerve damage may also accompany superficial frostbite. In case of deep frostbite, major areas of tissue are frozen and killed. The areas are cold, pale, solid, and hard. Infection and amputation often result. The patient must be evacuated. Medics should be cautioned that once the frozen area is thawed, do not allow it to refreeze and do not thaw unless continual warmth and litter evacuation are available. It may be necessary to prevent thawing in order for the injured soldier to walk out. Once thawing occurs, the severe pain prevents the patient from walking out, although codeine, aspirin, or morphine should help the patient.² Evacuation at altitude is often difficult. Weather or weight limitations may prevent a helicopter from flying to the patient. Often, patients must be carried on stretchers to lower elevations where the helicopters can fly to. Soviet experience fighting in the mountains of Afghanistan proved that 13 to 15 men might be involved in carrying out one patient. Exertion at altitude is difficult and the stretcher party had to provide its own security as well.⁸

HYPOTHERMIA

Hypothermia is the result of the body losing heat faster than it can produce it. The body's core temperature begins to drop and the patient shivers violently, has trouble using his hands, and is generally clumsy. When the core temperature falls to 90°-95° Fahrenheit [35°-32° Centigrade], the patient becomes uncoordinated, has difficulty speaking, and is disoriented and apathetic. As the core temperature continues to lower, the patient becomes more irrational, lapses into semi-consciousness and eventually unconsciousness and cardiac arrest. If the patient cannot be rewarmed on site, the patient needs to be evacuated. Medics should be equipped with the mountaineering hydraulic sarong—a rewarming device that wraps around the patient and circulates a warmed liquid from a camp stove or catalytic generator around the patient's body. "Hot oxygen" breathing units, which use a soda lime and CO² reaction to

warm oxygen, can also aid in rewarming the body core.² When a hypothermia casualty's body core temperature drops below 90°, when he stops shivering, or when he passes out, extra care must be given to handling him or he may develop cardiac arrhythmia and sudden death.⁵

FALLS AND CLIMBING INJURIES

Fractures, severe lacerations and contusions, or internal injuries often result from falls or by being hit by falling rock. The ABCDs of trauma should be followed. Medics should examine the patient for spinal injury as one of the first checks. Medics should not hesitate to put a cervical collar on fall victims with suspected cervical spine injuries, particularly since these can usually be cleared in the field, avoiding an unnecessary/hazardous medevac.⁵ Field splinting and immobilization should also be done before the patient is moved. The spleen, liver, and kidneys are the most likely organs to rupture and bleed internally from a fall. A torn diaphragm or intestine is also a possibility in falls and climbing injuries.²

MOUNTAIN SICKNESS, HIGH ALTITUDE PULMONARY EDEMA, AND CEREBRAL EDEMA

Mountain sickness or altitude sickness normally begins as a headache and may include insomnia, loss of appetite, vomiting, cough, shortness of breath, irregular breathing, tightness in the chest, loss of coordination, swelling around the eyes and face, general weakness, and reduction in the volume of urine produced. The patient will lose physical coordination and mental acuity and tire quickly after mild activity. Mountain sickness normally takes at least 24 hours to develop but non-acclimated personnel often develop the symptoms within 6 to 12 hours (if they are quickly transported to elevations at 11,475-14,750 feet [3500-4500 meters]). Treatment involves awareness of potential problems, rest, sleep, and a good meal. Should that fail, the patient should descend to a lower altitude for a few days rest until he improves.⁹

Moderate mountain sickness involves the same symptoms, but their intensity increases and urine output is often more reduced. If a day of rest does not help the patient, he should be brought down immediately. Usually, an early descent means an early recovery.²

Severe mountain sickness occurs in about 2-3% of mountain sickness cases and involves high altitude

pulmonary edema and/or cerebral edema. Twenty percent of acute severe mountain sickness cases prove fatal. Signs and symptoms of high altitude pulmonary edema, the collection of fluid in the lungs, include persistent cough, gurgling chest sounds, red frothy sputum, breathlessness, and tachypnea and tachycardia. Younger soldiers (under age 25) and soldiers with a history of pneumonia or other respiratory illness are prone to high altitude pulmonary edema. The symptoms of cerebral edema, swelling of the brain due to fluid, include headache, difficulty in balance, loss of coordination, and labored breathing. Severe mountain sickness may prove fatal within a few hours. Proficient medics may administer nifedipine and dexamethsone and, if available, administer oxygen or use a Gammow bag (pressurized bag also known as a certic bag).⁵ The patient still needs to be brought down. Oxygen, Diamox, Tylenol, aspirin, codeine, Decadron, Valium, Lasix, Phenergan or morphine have all been used to help the patient during descent.^{2,9,10}

The best prevention of mountain sickness is a gradual ascent with plenty of fluids and food provided to the soldiers. Climbing soldiers need to avoid overexertion. The worst approach is to drive or fly the soldiers from low to high altitude and then let them out to finish the ascent.²

“SIACHEN SYNDROME”

The change in barometric pressure and reduced quantity of oxygen at high altitude leads to mental status changes as well as physiological and psychosomatic changes. The Pakistani Army has noted that for every rise in a thousand feet, a person's temperament may change. A good-natured soldier at 19,000 feet may become irrational and selfish at 20,000 feet, introverted at 21,000 feet and unhinged at 22,000.³ Although not recognized as a disease, the so-called Siachen Syndrome has been noted among veterans of fighting on the Siachen glacier. Its symptoms include disorientation and different psychological disorders. The experience has resulted in psychiatric treatment for some of the veterans.¹¹ Team building, discipline, and productive activity help prevent the apathy, which leads to Siachen Syndrome.³

TRAINING THE MEDICAL FORCE FOR HIGH-ALTITUDE

The Soviet Union had a special course to train doctors to function effectively at high altitude. The course was founded in 1987—in the seventh year of the Soviet-Afghan War. The course was taught at

the Kirghizistan Medical Institute alongside normal medical courses and prepared military and civilian doctors for mountain rescue and high-altitude treatment duties. The course met twice monthly in hour-and-a-half sessions. The course devoted 34 lecture hours and 74 hours of practical application to medical topics. Another 792 hours were devoted to mountaineering training, of which 47 were lecture and the remainder practical application.¹² Although it would be difficult to find the time to train US military medical doctors to the same standard, the medical topics taught at the course may prove of value when planning a training course for medical personnel who may serve at high altitudes.

Topic	Lecture (hours)	Practical exercise
Introduction to goals, missions, and content of high altitude medicine. Special features of high-altitude physiology. Acclimatization to high altitude: Short term and long term. Mountain pathology.	2	2
Acute mountain sickness: etiology, pathogenesis, clinical picture, treatment, and prevention. Pulmonary edema	2	2
Effects of high altitude on the nervous system, heart vessels, excretory system, gastro-intestinal tract, and circulatory system. Diagnosis, treatment, and prevention.	2	2
Peculiarities of the course of "normal" illnesses at high altitude	2	2
Directing an acclimatization program. Personnel selection and prognosis of their health in the mountains. Medical oversight and preventive medical examinations.	2	2
Examination	-	2
Special features of mountain trauma. First aid for accidents	-	2
Diagnosis of trauma, broken bones of the extremities, methods of moving immobile patients	2	4
Evacuating patients in the mountains	-	4
Wounds, methods of stopping hemorrhage, bandaging	2	6
Depression	4	4

Topic	Lecture (hours)	Practical exercise
Traumatic shock, first aid for shock from mountain accidents, and trauma	2	4
Emergency medical service and transport of patients with trauma to the head, spine, chest, stomach and pelvis	2	6
Special features of medical treatment of freezing, frostbite, and snow blindness	2	-
Emergency medical service for drowning victims	2	-
Examination	-	2
Special aspects of organizing medical support for forces in the mountains	2	-
Rigging medical gear for evacuation and treatment in the mountains	2	2
Screening soldiers for service in the mountains	2	4
Oxygen equipment and its use	2	4
Training drills for high-altitude treatment	-	20
TOTAL	34	74

COMBINED PHYSICIAN'S CURRICULUM FOR MOUNTAIN RESCUE AND COMBAT

DIAGNOSTIC MODULE

Scissors
Blood pressure cuff
Stethoscope
Watch with sweep second hand
Penlight
Hemostat
Two thermometers (clinical and hypothermia)
Two pair tweezers
Three airways (adult, child, and pedi)
One syringe bulb
One 50cc suction syringe and catheter

INTRAVENOUS MODULE

Two 1000cc bags lactated Ringer's
One 500cc bag 5% dextrose in water
Two Macro solution sets
One Pedi-solution set
Two 20-gauge catheter needles
Two 18-gauge catheter needles
Two 16-gauge catheter needles
Two 14-gauge catheter needles
Two 19-gauge butterfly needles
Two 21-gauge butterfly needles
One roll 13mm tape
Five gauze pads, 5x5mm
Ten Band-Aids
Ten alcohol swabs
Four towelettes
Three tourniquets

TRAUMA & DRESSING MODULE

Two triangular bandages
Two Kerlix
Four Kling
Six Surgipads, 20 x 19cm
Three rolls of tape
One Ace bandage
One Betadine scrub
Three swabs
Six towelettes
Ten gauze pads, 10 x 10mm
Ten Band-Aids
Two Steri-strips, 13mm x 100mm
Two Steri-strips, 6 x 75mm
One pair bandage scissors
Ten ammonia inhalants
One 25 x 75cm large trauma dressing

DRUG MODULE

Injectable:

Two meperidine HCL (Demerol) 100mg
One Benadryl 50mg
One Xylocaine (lidocaine) 100mg
Two narlozone (Narcan) 0.4mg
Two epinephrine (Adrenalin) 1:1000 1mg
One Valium 10mg
One 25g dextrose in 50cc preloaded syringe
Two bicarbonate preloaded
Topical Neosporin ointment
Syringes & needles
 Three 3cc with needles
 Two 1cc with needles
Five alcohol swabs

Oral:

15 aspirin tablets
10 Seconal tablets, 100mg
10 Dexadrine tablets, 5mg
10 Codeine tablets
20 Salt tablets
20 Lomotil tablets
Syrup of Ipecac
Activated charcoal

SPLINTS MODULE

Two full-leg air splints
One arm air splint
One ankle air splint
One wrist air splint
One wire ladder splint
One cervical collar
One towel for cervical collar
Trauma dressing

SIGNAL & SURVIVAL MODULE

Flare gun and three flares
Orange hand-held smoke flare
Signal mirror
Whistle
Compass
Knife
Matches
Pencil and pad
Yellow plastic tube tent
Two space blankets
Maps
Toilet paper

OXYGEN MODULE

One D tank of oxygen
Oxygen mask and nasal cannula
Two oxygen bottles

Medic training for high altitude combat will necessarily involve many of the same skills needed in mountain search and rescue units. Medics will have to know how to rig patients and litters for evacuation from precarious positions. The search and rescue community has a wealth of information that can be tapped for military medical use. Search and rescue personnel in the Yosemite National Park region developed a field medical kit for use by EMT personnel. It can be carried in a single medium-sized pack with an internal frame or carried by several members of the unit since the kit is divided into modules. This kit provides a starting point for planning a high-altitude medic's kit.²

THINKING LOFTY THOUGHTS

The United States military is faced with a variety of challenges as it converts from a forward-deployed to an expeditionary force. Part of being an expeditionary force is planning and preparing for contingency missions in various regions. One possible contingency is deployment to a high-altitude region. U S Army regular and National Guard units that currently train in the mountains and Alaska are already aware of some of the problems involved in working at altitude and in the cold. They know that such a contingency mission would be difficult, but with proper foresight and preparation, medical personnel can meet the challenge and protect the force.

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REFERENCES

1. The Houghton Mifflin Dictionary of Geography: Places and Peoples of the World, Boston: Houghton Mifflin Company, 1997, 48 and 450.
2. Setnicka, Tim J. Wilderness Search and Rescue, Boston: Appalachian Mountain Club, 1980, 620.
3. Ali, Syed Ishfaq. Fangs of Ice: The Story of Siachen, Rawalpindi: Pak American Commercial PVT) Ltd., 1991, 15-16 and 110-111.
4. Punjab, Salman Beg. "Operations in Glaciated Areas", *Pakistan Army Journal*, Vol. XXXV, No. 1, Spring 1994, 5.
5. Thompson, Lt. Keith E. Comments made during a visit in December 2002 to the USMC Mountain Warfare Training Center, Bridgeport California.
6. Pravin Sawhnee, "Kashmir's Cold War", *Jane's International Defense Review*, December 1997, 59.
7. Lester W. Grau, *The Bear Went Over the Mountain: Soviet Combat Tactics in Afghanistan*, London: Frank Cass Publishers, 1999, 193-196.
8. Gromov, Boris. Ogranichennyy kontingent [Limited contingent], Moscow: Progress Publishers, 194, 186.
9. Malkin, V B. and Litovchenko, V. V. "O profilaktike gornoy bolezni" [Prevention of mountain sickness], *Voenno-meditsinskiy zhurnal* [Military-medical journal], September 1982, 38.
10. Murzaliev, A. M and Gol'dberg, P. N., "Lechebno-evakuatsionnye meropriyatiya pri ostrykh narysheniyakh mozgovogo krovoobrashcheniya v gorakh" [Treatment and evacuation measures for acute disruption of blood circulation to the brain in the mountains], *Voenno-meditsinskiy zhurnal* [Military-medical journal], December 1991, 19. Also, see Dennis La Ravia, Uzvaiantha Ganji, Robert Lahasky and Lynn Pittman-Cooley, "Review of Cerebral Edema: High Altitude Illness", *U.S. Army Medical Department Journal*, January-February 2000.
11. Sawhnee, Pravin. "Kashmir's cold war", *Jane's International Defense Review*, December 1997, 60.
12. Dergunov, A. V. and Didichenko, V. M. "O podgotovke vrachey-gornospasateley" [Preparing physician mountain rescuers], *Voenno-meditsinskiy zhurnal* [Military-medical journal], May 1991, 16.

Rotator Cuff Tendinopathy – Causes and Treatment

William C. Cottrell, MD and Paul A. Lunseth, MD

ABSTRACT:

Problems about the shoulder are a frequent source of concern because of the frequency and the disability that is associated with the shoulder. Shoulder problems may be a chronic condition which limits job performance, recreational activities, and interrupts sleeping.

The anatomy of the muscles and tendons are reviewed with respect to the evaluation of the shoulder. The treatment of the painful shoulder, both non-operative and operative management, is discussed.

BACKGROUND

The shoulder joint is one of the most flexible joints in the human body, allowing rotation in three planes (flexion/extension, abduction/adduction, and internal/external rotation). It is this mobility that contributes to the high incidence of injury and degenerative pathology of the shoulder joint. This is particularly true with regard to instability (dislocation), which is not discussed in this paper, but also significant as it relates to rotator cuff pathology.

The rotator cuff is a musculotendinous structure composed of four muscles arising on the scapula (supraspinatus, infraspinatus, teres minor, and sub-

scapularis) whose tendons are broad and form a layer around the shoulder joint as they attach at the humeral head. Its function is to stabilize the humeral head in the glenoid as well as contribute to rotation of the shoulder in all planes. As illustrated in Figure 1, the rotator cuff travels across the top of the head of the humerus, crossing under a bony and ligamentous structure called the coracoacromial arch. This structure is composed of the lateral acromion (a bony extension of the scapula) the acromio-clavicular (A-C) joint, and the coracoacromial ligament. As the shoulder is abducted, the rotator cuff can be pinched under this arch (Figure 2), particularly if there are inferior osteophytes or spurs on the acromion or distal clavicle or a hypertrophied coracoacromial liga-

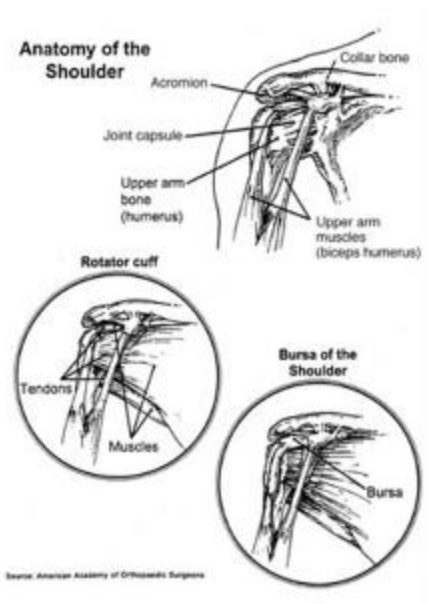


Figure 1

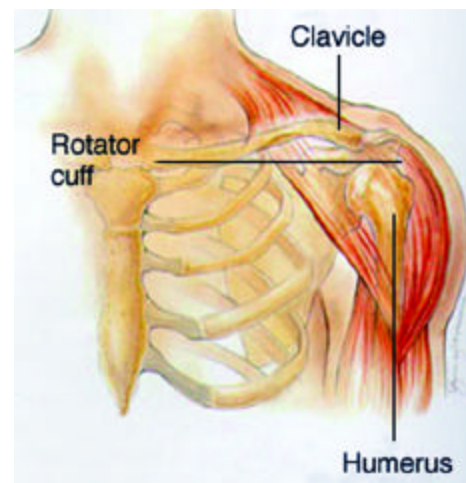


Figure 2

ment. The tendon of the long head of the biceps is intraarticular and can also be compromised with shoulder abduction (Figure 3). This phenomenon, called “impingement,” is the general mechanism for most rotator cuff pathology.

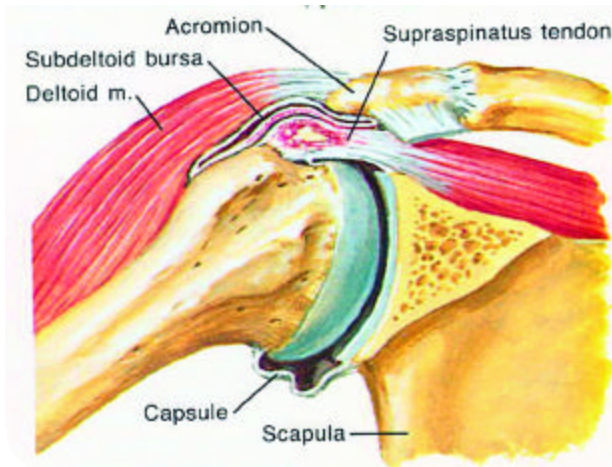


Figure 3

Impingement syndrome was classically described and classified by Neer in 1983.⁹ He divided the disease into three stages, in increasing order of severity. Stage I includes edema and hemorrhage and occurs mostly in young (< 25 years old) patients after overuse, and is reversible with conservative treatment. Stage II involves fibrosis and tendinitis, is typically seen in patients 25-40 years old, and may not respond to nonoperative measures. Stage III refers to bony changes (spurs, etc.) and complete tears of the rotator cuff and/or long head of the biceps tendon. Complete tears of the rotator cuff usually require surgical treatment (Figure 4).

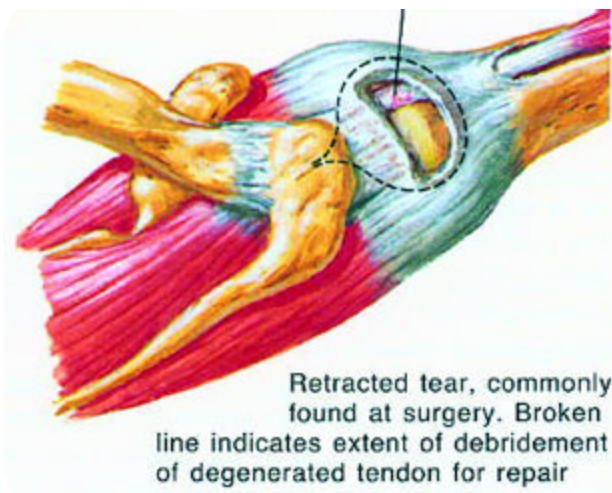


Figure 4

The concept of impingement is still valid today, although treatment has evolved over the past two decades, the general principles remain the same. Rotator cuff pathology is largely a degenerative phenomenon. Overuse leads to tendinitis of the rotator cuff (especially the supraspinatus) and inflammation of the subacromial bursa (bursitis). With chronicity, this can progress to degeneration of the tendon and eventual partial or full-thickness tears. While acute injury plays a role, particularly in the case of dislocations in older individuals, most cases of impingement are a result of chronic wear-and-tear. Even when the patient recalls a discrete injury, it is often a trivial injury, which has only served to complete a partial tear in a degenerated tendon.

EVALUATION

The patient with impingement syndrome typically presents with shoulder pain of variable duration. Overhead activities as simple as reaching higher shelves can be painful or impossible. Sleeping is often affected, usually due to inability to lie down on the involved shoulder. The usual patient is over 40 years old, but occasionally a younger person is seen. It is important to know if there is neck pain or symptoms of radiculopathy, which is a separate cause of shoulder pain.

Physical exam may reveal atrophy over the scapula in chronic cases, but usually there is no significant deformity. Range of motion may be decreased, particularly with active abduction. Passive motion is better-maintained unless the condition has evolved into frozen shoulder, a complex problem involving fibrotic changes in the shoulder capsule and which may involve aggressive treatment to recover. Palpation often reveals tenderness over the anterior acromion or anterior shoulder capsule in the region of the biceps tendon. Crepitus in the shoulder is often palpable and sometimes audible. It is also important to note signs of acromio-clavicular joint arthritis, namely tenderness over the A-C joint and pain in the A-C joint on cross-body adduction of the shoulder. The cervical spine should also be evaluated in terms of range of motion and neurologic status of the extremity.

There are two classic “impingement signs.” The Neer impingement sign involves passive forward flexion of the shoulder, which places the cuff and biceps tendon in its provocative position.⁹ Pain on this maneuver represents a positive sign. The Hawkins sign is pain on passive shoulder forward

flexion with internal rotation with the elbow bent. The impingement test is a positive impingement sign followed by a lidocaine injection into the subacromial space. Relief of pain is a positive impingement test. This is to differentiate the pain from arthritis or other sources of pain.⁹

Rotator cuff strength testing should also be assessed clinically against the examiner's manual resistance. With the arms at the side and the elbows bent, internal and external rotation strength (representing subscapularis and infraspinatus, respectively) can easily be measured. Abduction strength can be tested with the arms abducted slightly, measuring supraspinatus function. Teres minor function can be assessed with resisted extreme external rotation of an abducted shoulder. Marked weakness, particularly a positive "drop arm" sign (the patient cannot maintain an abducted arm against gravity) is strongly suggestive of a large rotator cuff tear. Lesser degrees of weakness may indicate a smaller tear or inflammation of the cuff and bursa. Interestingly, patients with certain patterns of full-thickness tears, particularly smaller ones, may maintain deceptively good strength.

Plain radiographs are used to assess acromial morphology, as a hooked acromion on the lateral view is highly correlated with rotator cuff pathology.¹ In cases of large tears, the humeral head may be elevated, decreasing the acromio-humeral interval and causing bony changes on the humerus and acromion. Chronic cases may lead to arthritis of the glenohumeral joint. The A-C joint is also evaluated for signs of arthritis, which is often present, but may not be symptomatic (thus the importance of correlating with the physical exam).

The gold standard diagnostic test for rotator cuff tears was the arthrogram, where radioopaque contrast is injected into the glenohumeral joint and extravasation into the subacromial bursa shows a complete tear. This test has largely been replaced by the magnetic resonance imaging exam, which is less invasive and offers more information about the character of the tendon and also may define other intra-articular pathology. It is also available with intra-articular contrast for further specificity. The traditional arthrogram is still occasionally ordered, usually in patients who have contraindications to MRI, such as cardiac pacemakers.

TREATMENT

The initial treatment of impingement syndrome is usually conservative. Activity modification for a period of time is required. The mainstay of treatment is physical therapy, with the primary goal being rotator cuff rehabilitation, initially restoring range of motion and then improving strength of the rotator cuff musculature.⁷ This involves stretching and the use of specialized rubber tubing and other devices to progressively increase the strength of the muscles, promoting resolution of the syndrome. Oral antiinflammatory medication and subacromial corticosteroid injection have a role in treatment as well, mainly serving to help to decrease the inflammation associated with tendinitis and bursitis.

If a patient fails a well-supervised rehabilitation program, generally after a period of months, or if a full-thickness rotator cuff tear is diagnosed, the patient may become a surgical candidate. The procedure performed for impingement syndrome is tailored to the individual patient's pathology. It generally involves anterior acromioplasty, a variation of the procedure originally described by Neer.⁸ The idea is to remove the offending inferior spur or hook of the acromion, "decompressing" the subacromial space and preventing further mechanical impingement. This may be performed via open surgery or using arthroscopic techniques. A partial-thickness rotator cuff tear may be treated with debridement along with acromioplasty, but more significant tears should be repaired using a variety of techniques, open or arthroscopic, in order to best give pain relief and restore function. Biceps tendon pathology, glenoid labrum (cartilage) degeneration, and A-C joint arthritis may also be addressed surgically at the same time. Postoperatively, a period of protection or immobilization (in the case of a repair) is followed by an intensive rehabilitation program tailored to the particular case. A period of several months is generally required for maximal recovery.

Results of conservative treatment of impingement are good, with most patients having improvement in symptoms.^{2,5} Surgical treatment has similar success rates for patients who fail conservative treatment or require acute surgical treatment.^{3,4} Negative prognostic factors include larger tears, chronicity of the tear, and medical comorbidities.⁶



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References

1. Bigliani LU, Morrison DS, April EW. The morphology of the acromion and its relationship to rotator cuff tears. *Orthopedic Transcripts* 1986; 10:228.
2. Blair B, Rokito AS, Cuomo F, Jarolem K, Zuckerman JD. Efficacy of injections of corticosteroids for subacromial impingement syndrome. *Journal of Bone and Joint Surgery American Edition* 1996; 78:1685-1689.
3. Cofield RH, Parvizi J, Hoffmeyer PJ, Lanzer WL, Ilstrup DM, Rowland CM. Surgical repair of chronic rotator cuff tears: A prospective long-term study. *Journal of Bone and Joint Surgery American Edition* 2001; 83:71-77.
4. Galatz LM, Griggs S, Cameron BD, Iannotti JP. Prospective longitudinal analysis of postoperative shoulder function. *Journal of Bone and Joint Surgery American Edition* 2001; 83:1052-1056.
5. Goldberg BA, Nowinski RJ, Matsen FA III. Outcome of non-operative management of full-thickness rotator cuff tears. *Clinical Orthopedics* 2001; 382:99-107.
6. Harryman DT II, Hettrich CM, Smith KL, Campbell B, Sidles JA, Matsen FA III. A prospective multipractice investigation of patients with full-thickness rotator cuff tears: The importance of comorbidities, practice, and other covariables on self-assessed shoulder function and health status. *Journal of Bone and Joint Surgery American Edition* 2003; 85:690-696.
7. Mantone JK, Burkhead WZ, Noonan J. Nonoperative treatment of rotator cuff tears. *Orthopedic Clinics of North America* 2000; 31:295-311.
8. Neer CS II. Anterior acromioplasty for the chronic impingement syndrome in the shoulder: A preliminary report. *Journal of Bone and Joint Surgery American Edition* 1972; 54:41-50.
9. Neer CS II. Impingement lesions. *Clinical Orthopedics* 1983; 173:70-77.

STAPHYLINID BEETLE DERMATITIS IN OPERATION ENDURING FREEDOM

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ABSTRACT

Dermatological complaints account for a significant amount of pathology in deployed forces (12.7% - 50% in recent military deployments, varying with activity and local climate according to a PubMed search over the past 10 years) and can result in incapacitating injury. Staphylinid (rove) beetles have an affinity for hot, tropical climates worldwide and possess hemolymph, which can produce irritating lesions to the skin and mucous membranes. This paper briefly reviews the literature and reports a series of cases seen in US forces deployed in support of Operation Enduring Freedom.

CASE SERIES REPORT

In early May 2002, night shift maintenance personnel deployed in support of Operation Enduring Freedom began complaining of dysesthetic, pruritic lesions distributed predominantly over the head and neck, with lesser numbers scattered around the wrist and waist. The personnel reported that their lesions appeared similar to those encountered in other maintenance troops several weeks earlier. The lesions were erythematous macules 1-3cm in diameter (some were confluent patches up to 8cm), several with vesicles, or more rarely pustules, superimposed on the bases. Most were linear or elliptical; a few were "kissing" lesions from opposing flexor surfaces. Cases over ten days old demonstrated mild atrophy of the skin and/or hyperpigmentation.



Erythematous inflammation of nape with resolving blisters, most frequent location for Staphylinid beetle dermatitis. Typically, the insects fell from overhanging structures to exposed parts of the body.

A midnight flight line clinic was begun in their work area. Twenty-seven patients were seen in the first week. The work area consisted of several hangars surrounded by camouflage netting located on a paved surface near fields thick with vegetation and a nearby irrigation source. Most patients worked on rotor-wing, rather than nearby fixed-wing, aircraft. The weather was exceptionally hot, with daytime temperature approaching 130°F (one patient suffered second-degree burns on the hand from transient contact with 148°F mud). Although no rain fell during this time, a sustained rainy period had concluded the



Resolving bullous lesions on an upper extremity demonstrate two classic presentations of Staphylinid beetle dermatitis - "kissing" lesions from opposing flexor surfaces, and "dermatitis linearis" (the distal lesion) which results from wiping toxic hemolymph across the skin.

month before, and significant variance in daily relative humidity occurred. No patients could recall contact with caustic chemicals or insect bites, but all mentioned a wide variety of flying insects in their work area that sporadically appeared for a few days, and then largely disappeared. One species in particular was noted to congregate in illuminated areas, resting on nearby structures such as camouflage netting and helicopter rotor blades. These insects were collected and identified by entomologic authorities to be Staphylinid beetles, genus *Paederus*. Staphylinid beetle pathology previously had not been reported in this country.



Staphylinid beetles, genus *Paederus*



Photo of Staphylinid beetle next to knife illustrates its remarkably small size and ant-like appearance.

Though most complaints were not disabling, one pilot reported for sick call with severe right eye pain and photophobia that began upon waking from a prolonged sleep in his quarters. Clinical exam was

significant for chemosis, periorbital erythema and swelling, and keratoconjunctivitis with corneal ulceration demonstrated by fluorescein staining. The patient was transported to a nearby country for specialist evaluation. Ophthalmology consultation diagnosed a toxic epithelial defect of probable chemical etiology affecting 1/3 of the cornea with accompanying periorbital cellulitis. He was treated with systemic and ophthalmic antibiotics with appropriate eventual resolution of his symptoms.

Etiology, Epidemiology, And Pathology

Three families of beetles are capable of inducing vesicular or bullous lesions: Meloidae, Oedemeridae, and Staphylinidae. The first two families include notorious species such as the "Spanish fly." Noxious species in these families exude cantharidin from the membranes of their appendage joints, which uniformly causes symptoms within 2 hours, and often within 10 minutes.^{1,2,3} Certain Staphylinid species of the genus *Paederus* ("rove beetles") elaborate a different toxin. Hemolymph of certain *Paederus* species often contains a unique alkaloid, pederin, which may require bacterial symbiosis for production, and which has also demonstrated antitumor properties in laboratory animals by inhibiting DNA replication.^{4,5,6} Initial diagnosis is often difficult because unlike cantharidin, pederin's effects are not noted for 12 to 24 hours, long after the initial exposure occurred.³

Paederus species are small (5-10 mm long x 1 mm wide) and found predominantly in hot, tropical climates around the world. They typically are dark blue to black, with brighter red or orange areas over the thorax and abdomen.^{2,6} Capable of flight, rove beetles often are mistaken for flying ants or termites, as their leathery forewings (elytra), prominent in most beetles, are relatively diminutive compared to their translucent underwings used for flight.

Paederus dermatitis has been reported in Brazil, China, Australia, Iran, Turkey, Egypt, Malaysia, Kenya, Uganda, Congo, Zaire, Gabon, Guinea, Paraguay, Thailand, Japan, Vietnam, Sri Lanka, Israel, Uganda, Tanzania, Kenya, Nigeria, and possibly the southwestern USA.^{2,5} Rove beetles are most often found in wet areas near crop fields (such as rice or corn), around decaying vegetation where they feed on detritus and prey on other insects, or near marshes or riverbeds.⁷ Their appearance is episodic, generally following heavy rains (particularly the end of a rainy season) during relatively hot seasons.^{2,3,5} Rove beetles rest during the day in dark,

shady areas under foliage, or when near human settlements, under carpets and bed liners and usually encounter humans near lit areas at night, although contact during sleep in beds has been reported.^{2,5,7} Unlike cantharidin-producing beetles, rove beetles do not bite, sting, or excrete their toxin. However, when the insects are crushed, their hemolymph contacts the skin, leading to inflammation.

Staphylinid beetles most often contact humans while falling from overhanging structures. Lesions typically are reported over areas of exposed skin, such as the face, neck, shoulders, and forearms, with a lesser number reported from chest and abdomen, particularly in areas of constriction, such as the belt line. Two presentations often reported are “dermatitis linearis” most likely resulting from the patient wiping the insect’s contents across the skin, and “kissing lesions” on opposing flexor surfaces.^{2,5} Affected areas initially manifest with erythema and a burning or pruritic dysesthesia in 12 to 24 hours, with blistering (which may appear pustular) in 48 to 96 hours.⁶ Lesions typically resolve spontaneously over 7 to 10 days, though a minority will develop long-term hyperpigmentation.² Occasionally, secondary infection develops which may rarely progress to form an abscess. Application of steroids after the blister has ruptured should be avoided to decrease the risk of this complication.^{5,6,7}

Histopathologic exam of lesions demonstrates full-thickness epidermal necrolysis with neutrophil exocytosis and intraepidermal vesiculation with no underlying dermal process.^{2,3} Marked acanthosis with mitotic figures can be observed in later stages, most likely mediated by epidermal proteases.⁸

“Nairobi eye” is an informal term describing conjunctivitis from pederin exposure. Although the sobriquet obviously originated in Africa, cases have been documented in Italy, Australia, and other countries.² Treatment is generally expectant, although blindness can result; ophthalmologic consultation should be procured if possible.² Despite potential ophthalmologic sensitivity, other mucosal areas and glabrous skin appear resistant. Severe gastrointestinal and urinary symptoms have been reported after cantharidin ingestion, but not pederin ingestion.^{6,9} Systemic symptoms (nausea, vomiting, fever, neuralgia, arthralgia, etc.) have been reported after massive skin exposure.²

Differential diagnosis for pederin exposure may include thermal/chemical burn, porphyria, dermatitis herpetiformis, herpes zoster, herpes simplex,

bullous impetigo, pemphigus vulgaris, contact dermatitis, urticating caterpillar dermatitis, phytophotodermatitis, varicella, and other vesicular conditions, including in a military or bioterrorism setting, blistering chemical agents (mustard gas, Lewisite) or biological agents (T2 mycotoxins).^{3,7}

Treatment And Prevention

Although most cases resolve spontaneously, numerous authors have reported a variety of symptomatic treatments targeted at reducing discomfort such as silver sulfadiazine, topical steroids, and aqueous creams.^{2,6,7} As no consensus has been reported on effective treatment, we utilized a variety of modalities in managing our 26 cases: silver sulfadiazine, hydrocortisone cream, calamine lotion, or observation alone. In contrast to others’ observations, both silver sulfadiazine and hydrocortisone cream were either ineffective or actually worsened the discomfort.^{6,7} Moreover, as our patients lived and worked in extreme heat, creams were sweated off rapidly, and became an annoyance. Calamine lotion emerged early in the process to be the treatment preferred by patients. Many of our patients experimented with over-the-counter preparations and found maximal relief with a combination of astringent agents, usually either with witch hazel followed by calamine lotion, or with direct application of Gold Bond® powder (menthol, zinc oxide, methyl salicylate, aca-cia, eucalyptol, salicylic acid, talc, thymol, and zinc stearate). A number of patients cleaned the lesions with hydrogen peroxide daily before applying these agents, but no remarkable impact was observed. As hydrogen peroxide is toxic to healing dermal tissue and affords no bactericidal function,¹⁰ this practice was discouraged.

Prevention begins with awareness of where rove beetles congregate. They are most frequently reported in hot, tropical climates, especially after heavy rains. In our setting we measured hourly relative humidity for two weeks to explore a relationship between this factor and the sporadic emergence of the rove beetles but no significant association was found. Persons deployed in conditions favorable for rove beetle exposure should be wary around lighted areas or under overhanging structures which can be disturbed or shaken (camouflage netting, tarp covers, rotor blades), dropping insects onto unwary passers-by beneath. As rove beetles are not attracted to humans, insect repellent offers minimal protection. However, maximal skin coverage, wide-brimmed head gear, and t-shirts with tightly fitting necks help.

Most importantly, avoiding the temptation to crush an insect on one's skin, gently brushing it off one's body instead, will effectively prevent contact with the rove beetle's hemolymph. This can be a difficult reaction to modify in areas concomitantly plagued with biting insects such as mosquitoes.

Acknowledgments

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Photo of author while deployed in support of Operation Enduring Freedom.

Maj Chambers graduated from Tulane Medical School, and after a surgical internship at Travis AFB, California, spent the next 6 years serving with special operations units. He spent 2 years at Hurlburt Field, Florida, followed by a 4 year tour at Fort Bragg, North Carolina. Maj Chambers recently started his second year of general surgery residency at University of Texas Southwestern Medical Center/Parkland Hospital, Dallas and remains on active duty.

REFERENCES

1. Department of the Navy, Bureau of Medicine and Surgery Manual of Naval Preventive Medicine(2002): Chapter 8: Naval Entomology and Pest Control Technology: Section VI. Vector Control: Shipboard and Ashore.
2. Banney LA, Wood DJ, Francis GD. Whiplash rove beetle dermatitis in central Queensland. *Australas Journal of Dermatology* 2000 Aug;41(3):162-7.
3. Claborn DM, Polo JM, Olson PE, Earhart KC, Sherman SS. Staphylinid (rove) beetle dermatitis outbreak in the American southwest? *Military Medicine* 1999 Mar;164(3): 209-13.
4. Kellner RL. Suppression of pederin biosynthesis through antibiotic elimination of endosymbionts in *Paederus sabaeus*. *Journal of Insect Physiology* 2001 Apr;47(4-5): 475-83.
5. Morsy TA, Arafa MA, Younis TA, Mahmoud IA. Studies on *Paederus alfieri* Koch (Coleoptera:Staphylinidae) with special reference to the medical importance. *Journal of Egyptian Society of Parasitology* 1996 Aug;26(2):337-51.
6. Williams AN. Rove beetle blistering--(Nairobi Eye). *Journal of the Royal Army Medical Corps* 1993 Feb;139 (1):17-9
7. Mokhtar N, Singh R, Ghazali W. *Paederus* dermatitis amongst medical students in USM, Kelantan. *Medical Journal of Malaysia* 1993 Dec;48(4):403-6.
8. Borroni G, Brazelli V, Rosso R, Pavan M. *Paederus fuscipes* dermatitis. A histopathological study. *American Journal of Dermatopathology* 1991 Oct;13(5): 467-74.
9. Tagwireyi D, Ball DE, Loga PJ, Moyo S. Cantharidin poisoning due to "blister beetle" ingestion. *Toxicon* 2000 Dec;38(12):1865-9.
10. Lawrence WT, in The Physiologic Basis of Surgery, O'Leary (ed.) 3d edition, Lippincott Williams & Wilkins, 2002, p. 122

TACTICAL COMBAT CASUALTY CARE-2003

Stephen D. Giebner, MD, MPH

ABSTRACT

The original guidelines for Tactical Combat Casualty Care were published in 1996. In 2000, the USSOCOM Biomedical Initiatives Steering Committee convened the Committee on Tactical Combat Casualty Care (CoTCCC) to update the guidelines to reflect advances in pharmacology, technology, and tactics. The CoTCCC completed this work in 2003. The new guidelines are introduced and presented in comparison to the original, with a brief discussion of the rationale behind the changes.

The Tactical Combat Casualty Care (TCCC) guidelines were first published in 1996 as a special supplement to Military Medicine.¹ This hallmark publication marked the culmination of a multi-year effort that began with a needs statement from Commander, Naval Special Warfare Command.¹ Six years later, the Biomedical Initiatives Steering Committee of the United States Special Operations Command convened the Committee on Tactical Combat Casualty Care (CoTCCC) via a project facilitated by the Naval Operational Medicine Institute.

The Committee's purpose is to monitor developments applicable to TCCC, and to periodically update the guidelines. The CoTCCC comprises a multi-service group of trauma surgeons, operational medical specialists, and, most importantly, combat medics. Figure 1 depicts the committee's membership.

The 2003 TCCC guidelines are the first such update rendered by the committee. The new guidelines along with explanatory text appear in the chapter on military medicine in the *Prehospital Trauma Life Support Manual*.² Acknowledging the committee's authorship, this article presents the new guidelines in comparison to the original, with discussion limited to the differences between. The three goals of TCCC provide the background for this examination. They are:

1. Treat the casualty.
2. Prevent additional casualties.
3. Complete the mission.

Readers will perhaps understand from their own experience that these goals are not presented as a hierarchy. The realities of combat frequently dictate that the last must override the others. This fact demonstrates the importance of mission commanders and their combat medics working together in casualty management. It also highlights the need for providing mission commanders a working familiarity with the tenets of TCCC.

Figure 1

The Committee on Tactical Combat Casualty Care: 2002

Chairman – CAPT Stephen Giebner
Col Robert Allen
COL Frank Anders
CPT Steve Anderson
Col James Bagian
COL (R) Ron Bellamy
1LT Bart Bullock
CAPT Frank Butler
Dr. Howard Champion
TSgt George Cum
CAPT Roger Edwards
LTC Stephen Flaherty
CDR Scott Flinn
Maj John Gandy
CAPT Larry Garsha
COL John Holcomb

Dr. David Hoyt
Lt Col Donald Jenkins
Col Jay Johannigman
MSG John Kennedy
CPT Robert Mabry
Dr. Norman McSwain
SFC Robert Miller
MAJ Kevin O'Connor
CAPT Edward Otten
Lt Col Tyler Putnam
CDR Peter Rhee
CAPT Larry Roberts
CDR Jeff Timby
HMCM Gary Welt
Executive Assistants:
LT David Anderson
Ms. Shannon Addison

As defined in the original article¹, TCCC is broken down into three phases:

1. “Care Under Fire” refers to care rendered at the scene of the injury while both the medic and the casualty are under effective hostile fire. The risk of additional injuries being sustained at any moment is extremely high for both casualty and rescuer. Available medical equipment is limited to that carried by each operator and the medic.

2. “Tactical Field Care” is the care rendered once the casualty and his unit are no longer under effective hostile fire. It also applies to situations in which an injury has occurred on a mission, but hostile fire has not been encountered. Medical equipment is still limited to that carried into the field by mission personnel. Time to extraction may range from a few minutes to many hours.

3. “Combat Casualty Evacuation Care” (CASEVAC) is the care rendered while the casualty is being evacuated by an aircraft, ground vehicle, or boat for transportation to a higher echelon of care. Any additional personnel and medical equipment pre-staged in these assets will be available during this phase. The term “CASEVAC” is used to describe this phase since “MEDEVAC” refers to a non-combat medical transport.

CARE UNDER FIRE

The original *care under fire* guidelines are presented in Figure 2, and the 2003 version in Figure 3. The first point of difference stems from recognition that some wounds will not be incapacitating and that whenever possible, the wounded will not only continue the firefight, but also finish the mission.

The second change, a hemostatic intervention for non-extremity wounds, was made possible by the advent of the HemCon Bandage™. This is a **Figure 2**

Care Under Fire - 1996

1. Return fire as directed or required
2. Try to keep yourself from getting shot
3. Try to keep the casualty from sustaining additional wounds
4. Airway management is generally best deferred until the Tactical Field Care Phase
5. Stop any life-threatening external hemorrhage with a tourniquet
6. Take the casualty with you when you leave

Figure 3

CARE UNDER FIRE - 2003

1. Expect casualty to stay engaged as a combatant if appropriate
2. Return fire as directed or required
3. Try to keep yourself from being shot
4. Try to keep the casualty from sustaining additional wounds
5. Airway management is generally best deferred until the Tactical Field Care phase
6. Stop any life-threatening external hemorrhage:
 Use a tourniquet for extremity hemorrhage
 For non-extremity wounds, apply pressure and/or a HemCon® dressing
7. Communicate with the patient if possible:
 Offer reassurance, encouragement
 Explain first aid actions

tosan dressing that has demonstrated efficacy in laboratory trials, and can be applied rapidly, even under combat conditions. Its application while under fire, like any other medical intervention, must be weighed against the risk of additional injuries if the medic disengages from the firefight. To minimize this risk and to provide for the earliest possible hemostasis on the battlefield, the committee has recommended that all combatants should carry both tourniquets and hemostatic dressings, and should be proficient in their application upon themselves and others.

The third change in *care under fire* is the addition of a simple reminder to talk to the patient. Understanding what is happening physically and what the medic will do and why has a highly desirable positive impact on the wounded.

The last change made to *care under fire* is the deletion of the statement about taking the casualty along. This was dropped from the guidelines as it is a tactical decision, not a medical one.

TACTICAL FIELD CARE

Original and updated *tactical field care* guidelines are depicted in Figures 4 and 5 respectively. The first change here addresses the obvious need to disarm any casualty with altered mental status to prevent inadvertent or inappropriate employment of the casualty's weapons. The committee's modifications to the *airway management* guidelines present a progressive scheme from simple to more invasive. Opening the airway manually, inserting a nasopharyngeal airway, and placing the casualty in the recovery position should suffice for unconscious casualties without airway obstruction. For casualties (conscious or not) with frank or impending airway

Figure 4

Tactical Field Care - 1996

1. Airway management
 - Chin-lift or jaw-thrust
 - Unconscious casualty without airway obstruction: Nasopharyngeal airway
 - Unconscious casualty with airway obstruction: Cricothyroidotomy
 - Cervical spine immobilization is not necessary for casualties with penetrating head or neck trauma
2. Breathing
 - Consider tension pneumothorax and decompress if a casualty has unilateral penetrating chest trauma and progressive respiratory distress
3. Bleeding
 - Control any remaining bleeding with a tourniquet or direct pressure
4. IV
 - Start an 18-gauge IV or saline lock
5. Fluid resuscitation
 - Controlled hemorrhage without shock:
 - No fluids necessary
 - Controlled hemorrhage with shock:
 - Hespan 1000cc if available; otherwise LR 2000cc
 - Uncontrolled (intra-abdominal or thoracic) hemorrhage:
 - No IV fluid resuscitation
6. Inspect and dress wound
7. Check for additional wounds
8. Analgesia as necessary:
 - Morphine - 5mg IV
 - Wait 10 minutes
 - Repeat as necessary
9. Splint fractures and recheck pulses
10. Antibiotics
 - Cefoxitin - 2gm slow IV push (over 3-5 minutes) for penetrating abdominal trauma, massive soft tissue damage, open fractures, grossly contaminated wounds, or long delays before casualty evacuation
11. Cardiopulmonary resuscitation
 - Resuscitation on the battlefield for victims of blast or penetrating trauma who have no pulse, no respirations, and no other signs of life will not be successful and should not be attempted

Figure 5

Tactical Field Care - 2003

1. Casualties with an altered mental status should be disarmed immediately
2. Airway management
 - Unconscious casualty without airway obstruction:
 - Chin lift or jaw-thrust
 - Nasopharyngeal airway
 - Place casualty in recovery position
 - Casualty with airway obstruction or impending airway obstruction
 - Chin-lift or jaw-thrust
 - Nasopharyngeal airway
 - Place casualty in recovery position
 - Surgical cricothyroidotomy (with lidocaine if conscious) if above measures unsuccessful
 - Spinal immobilization is not necessary for casualties with penetrating trauma

3. Breathing
 - Consider tension pneumothorax and decompress with needle thoracostomy if casualty has torso trauma and respiratory distress
 - Sucking chest wounds should be treated by applying a Vaseline gauze during expiration, covering it with tape or a field dressing, placing the casualty in the sitting position, and monitoring for development of a tension pneumothorax
4. Bleeding
 - Assess for unrecognized hemorrhage and control all sources of bleeding
 - Assess for discontinuation of tourniquets after application of hemostatic dressing (HemCon®) or a pressure dressing
5. IV
 - Start an 18-gauge IV or saline lock, if indicated
 - If resuscitation is required and IV access is not obtainable, use the intraosseous route
6. Fluid resuscitation
 - Assess for hemorrhagic shock; altered mental status in the absence of head injury and weak or absent peripheral pulses are the best field indicators of shock
 - If not in shock:
 - No IV fluids necessary
 - PO fluids permissible if conscious
 - If in shock:
 - Hextend 500cc IV bolus
 - Repeat once after 30 minutes if still in shock
 - No more than 1000cc of Hextend
 - Continued efforts to resuscitate must be weighed against logistical and tactical considerations and the risk of incurring further casualties
 - If a casualty with TBI is unconscious and has no peripheral pulse, resuscitate to restore the radial pulse
7. Inspect and dress known wounds
8. Check for additional wounds
9. Analgesia as necessary
 - Able to fight:
 - Rofecoxib 50mg po qd
 - Acetaminophen 1000mg po q6h
 - Unable to fight:
 - Morphine 5mg IV/IO
 - Reassess in 10 minutes
 - Repeat dose q10min as necessary to control severe pain
 - Monitor for respiratory depression
 - Promethazine 25mg IV/IO/IM q4h
10. Splint fractures and recheck pulse
11. Antibiotics: Recommended for all open combat wounds
 - Gatifloxacin 400mg PO qd
 - If unable to take PO (shock, unconscious, or penetrating torso injuries)
 - cefotetan 2gm IV (slow push over 3-5 minutes) or IM q12 hours
12. Communicate with the patient if possible
 - Encourage, reassure
 - Explain care
13. Cardiopulmonary resuscitation
 - Resuscitation on the battlefield for victims of blast or penetrating trauma who have no pulse, no respirations, and no other signs of life will not be successful and should not be attempted.

obstruction, if these simple measures prove insufficient, the medic should proceed to surgical cryothyroidotomy. The committee still sees cryothyroidotomy as yielding the highest probability of success in the tactical setting, so it is still preferred here over oropharyngeal intubation.

Under *breathing*, the committee added conventional advice on battlefield management of sucking chest wounds. It is attended by the obligation to monitor for tension pneumothorax.

With respect to hemostasis, the new guidelines contain an additional prompt to the medic to transition from applied tourniquets to hemostatic or pressure dressings whenever possible. This is an necessary follow-on to the use of tourniquets in order to minimize the risk of ischemic or compressive injuries.

The modification “if indicated” added to the recommendation for IV access recognizes that some casualties will require neither IV medications nor IV fluid resuscitation. This recognition is continued in the expanded guidelines for fluid resuscitation, analgesia, and antibiotic therapy. The committee also points out here that the IO route is an effective alternative. Contemporary IO devices are safe, quick, and generally easy to use on the battlefield, and the IV regimens for analgesia and antibiotic therapy can be given IO. Of the available devices, the general consensus among committee members was that the FAST-1™ sternal intraosseous was best suited for the tactical environment.

The recommendations for fluid resuscitation were extensively modified. The Hextend® formulation of hetastarch is now recommended as the resuscitation fluid of first choice on the battlefield. It has not yet been widely used as a front-line resuscitation fluid, but in clinical settings, it provides a prolonged physiologic effect with minimal volumes. Furthermore, a protective influence against multiple organ injury after hepatoenteric ischemia reperfusion has been reported. The new guidelines propose that all casualties in shock (defined by absent peripheral pulses or altered mental status in the absence of brain injury) be given a 500cc rapid IV bolus of Hextend. If no improvement is noted in 30 minutes, the bolus is repeated once. Resuscitation thereafter remains a matter of clinical judgment, supplies on hand, and tactical considerations. This regimen offers important advantages: 1) titration to the desired effect conserves both fluid and time; 2) administration of fluids keyed to a monitored response may avoid the problem of excessive blood pressure elevation and fatal rebleed-

ing from previously clotted sites; and 3) tailoring fluid therapy to clinical response is consistent with ATLS teaching, and allows for a single approach to patients with both controlled and uncontrolled hemorrhage. Other resuscitation fluids offer great promise for battlefield use, and further investigations in this area are forthcoming. For the present, however, Hextend® is the recommended fluid for the Tactical Field Care phase.

Another noteworthy change from the original guidelines is the recommendation for oral (PO) fluids for casualties with penetrating trauma. This recommendation is based upon two important observations. First, trauma surgeons attached to forward-deployed treatment facilities report that combat casualties arrive at the OR markedly dehydrated. Second, in trauma surgery centers, the observed risk of emesis and aspiration in alert patients with penetrating trauma is remarkably low. Under the new guidelines, therefore, PO fluids are recommended for all casualties with a normal state of consciousness, including those with penetrating torso trauma.

The last change made to the fluid resuscitation guidelines is a modified regimen for casualties with traumatic brain injury (TBI) and shock. Hypotension in the presence of brain injury is associated with increased mortality, and in these patients, adequate cerebral perfusion pressure must be ensured. These casualties should receive IV or IO fluids to achieve a palpable radial pulse, commensurate with a systolic blood pressure of at least 80 mm Hg.

The committee expanded the analgesia guidelines to include a PO regimen for moderate pain for casualties who will be able to continue as combatants. The combination of acetaminophen and rofecoxib should preserve normal sensorium while providing significant pain relief. Rofecoxib (Vioxx®) is a cyclo-oxygenase-2 (Cox-2) inhibitor that does not cause platelet dysfunction, and has a milder side effects profile than other Cox-2 inhibitors. Furthermore, it carries no contraindication in sulfasensitive individuals. In the regimen for IV analgesia, the Committee also added a recommendation for promethazine to combat the nausea and vomiting often associated with the use of morphine.

The antibiotic regimen was changed significantly, beginning with the recommendation that antibiotics should be given for any significant open wound on the battlefield to combat the increased risk of morbidity and mortality associated with infection. Gatifloxacin, a fourth generation fluoroquinolone, emerged as the agent of choice in the new PO regimen due to its high rating on several important characteristics. It has a very broad spectrum of activity, includ-

ing *Vibrio* and *Aeromonas* species of interest in aquatic operations; its once daily dosing allows for minimal weight and cubes in the medic's ruck; it has a mild side effects profile; it is environmentally stable; and it is competitively priced. For those patients requiring IV antibiotic therapy, cefotetan is the new drug of first choice for similar considerations.

CASEVAC CARE

Casevac guidelines expand upon the Tactical Field Care guidelines with the caveat that additional medical equipment and personnel will be available on the extraction platform. The old and new guidelines are presented in Figures 6 and 7. Pre-planning for this phase of the mission would optimally include provisions for airway intubation alternatives, oxygen as needed, options for continued fluid resuscitation, and electronic monitoring. The serious potential for casualties to develop hypothermia and secondary coagulopathy received special emphasis during Casevac. Concomitant use of the Thermal Angel™ device, the

Rescue Wrap™, and gel heaters was endorsed in recognition of the successful use of this combination in combat operations.

It is also particularly noteworthy here that the Committee reiterated the recommendation to establish designated Combat Casualty Transportation Teams for Special Operations forces.

Acknowledgments

The Naval Operational Medical Institute that facilitated this project, and the sponsor, the US Special Operations Command Biomedical Initiatives Steering Committee deserve special thanks for making the work of the Committee possible. This author expresses a special appreciation for the hard work of the members and support staff of the CoTCCC, and for the enthusiasm with which they embraced this effort. No acknowledgement would be complete without recognizing the Special Operations medics who put their lives on the line to aid wounded teammates. Hopefully, this work will be worthy of them.

Figure 6

Combat Casualty Evacuation (CASEVAC) Care - 1996

1. Airway management
 - Chin-lift or jaw-thrust
 - Unconscious casualty without airway obstruction: Nasopharyngeal airway, endotracheal intubation, Combitube or laryngeal mask airway
 - Unconscious casualty with airway obstruction: Cricothyroidotomy if endotracheal intubation and/or other airway devices are unsuccessful
2. Breathing
 - Consider tension pneumothorax and decompress with needle thoracostomy if a casualty has unilateral penetrating chest trauma and progressive respiratory distress.
 - Consider chest tube insertion if a suspected tension pneumothorax is not relieved by needle thoracostomy
 - Oxygen
3. Bleeding
 - Consider removing tourniquets and using direct pressure to control bleeding if possible
4. IV
 - Start an 18-gauge IV or heparin lock if not already done
5. Fluid resuscitation
 - No hemorrhage or controlled hemorrhage without shock: Lactated Ringers at 250cc/hr
 - Controlled hemorrhage with shock: Hespan 1000cc initially if available; otherwise LR 2000cc
 - Uncontrolled (intra-abdominal or thoracic) hemorrhage:
 - No IV fluid resuscitation
 - Head wound patient:
 - Hespan at minimal flow to maintain infusion unless there is concurrent controlled hemorrhagic shock
6. Monitoring
 - Institute electronic monitoring of heart rate, blood pressure, and hemoglobin oxygen saturation
7. Inspect and dress wound if not already done
8. Check for additional wounds
9. Analgesia as necessary:
 - Morphine - 5mg IV
 - Wait 10 minutes
 - Repeat as necessary

10. Splint fractures and recheck pulses if not already done
11. Antibiotics (if not already given):
 - Cefoxitin - 2gm slow IV push (over 3-5 minutes) for penetrating abdominal trauma, massive soft tissue damage, open fractures, grossly contaminated wounds, or long delays before casualty evacuation

Figure 7

Combat Casualty Evacuation (CASEVAC) Care - 2003

1. Airway management
 - Unconscious casualty without airway obstruction:
 - Chin-lift or jaw-thrust
 - Nasopharyngeal airway
 - Place casualty in recovery position
 - Casualty with airway obstruction or impending airway obstruction:
 - Chin-lift or jaw-thrust
 - Nasopharyngeal airway
 - Place casualty in recovery position
 - or
 - Laryngeal mask airway/ILMA
 - or
 - Combitube
 - or
 - Endotracheal intubation
 - or
 - Surgical cricothyroidotomy (with lidocaine if conscious)
 - Spinal immobilization is not necessary for casualties with penetrating trauma
2. Breathing
 - Consider tension pneumothorax and decompress with needle thoracostomy if casualty has torso trauma and respiratory distress
 - Consider chest tube insertion if no improvement and/or long transport anticipated
 - Most combat casualties do not require oxygen, but administration of oxygen may be of benefit for the following types of casualties:
 - Low oxygen saturation by pulse oximetry
 - Injuries associated with impaired oxygenation
 - Unconscious patient
 - TBI patients (maintain oxygen saturation > 90)
 - Sucking chest wounds should be treated with a Vaseline gauze applied during expiration, covering it with tape or a field dressing, placing the casualty in the sitting position, and monitoring for the development of a tension pneumothorax
3. Bleeding
 - Reassess for unrecognized hemorrhage and control all sources of bleeding
 - Assess for discontinuation of tourniquets after application of hemostatic dressing (HemCon®) or a pressure dressing
4. IV
 - Reassess need for IV access
 - If indicated, start an 18-gauge IV or saline lock
 - If resuscitation is required and IV access is not obtainable, use intraosseous route
5. Fluid resuscitation
 - Reassess for hemorrhagic shock
 - Altered mental status (in the absence of brain injury) and/or abnormal vital signs
 - If not in shock:
 - IV fluids not necessary
 - PO fluids permissible if conscious

If in shock:

Hextend 500cc IV bolus

Repeat after 30 minutes if still in shock

Continue resuscitation with PRBC, Hextend, or LR as indicated

If a casualty with TBI is unconscious and has no peripheral pulse, resuscitate as necessary to maintain a systolic blood pressure of 90mm Hg or above

6. Monitoring

Institute electronic monitoring of pulse oximetry and vital signs if indicated

7. Inspect and dress wound if not already done

8. Check for additional wounds

9. Analgesia as necessary

Able to fight:

Rofecoxib 50mg po qd

Acetaminophen 1000mg po q6h

Unable to fight:

Morphine 5mg IV/IO

Reassess in 10 minutes

Repeat dose q10min as necessary to control severe pain

Monitor for respiratory depression

Promethazine 25mg IV/IO/IM q4h

10. Reassess fractures and recheck pulses

11. Antibiotics: Recommended for all open combat wounds

Gatifloxacin 400mg PO qd

If unable to take PO (shock, unconscious, or penetrating torso injuries):

IV cefotetan 2gm IV (slow push over 3-5 minutes) or IM q12 hours

12. MAST trousers may be useful for stabilizing pelvic fractures and controlling pelvic and abdominal bleeding. Their application and extended use must be carefully monitored. They are contra-indicated for casualties with thoracic and brain injuries.

REFERENCES

1. Butler F, Hagmann J, Butler E. Tactical Combat Casualty Care in Special Operations. *Military Medicine* 1996; 161: Supplement 1-16
2. McSwain N, ed: *Military Medicine*. Prehospital Trauma Life Support, revised 5th ed. St Louis, MO: Mosbey; 2003: pp. 374-408



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CAPT, MC, USN

CAPT Giebner is a native of Savannah, GA. He attended the Medical College of Georgia on the Navy Health Professions Scholarship Program, followed by a flexible medicine internship at Naval Hospital Oakland, CA. Thereafter, he completed the Navy Undersea Medicine Officer Course and reported for his first duty

assignment as a Diving Medical Officer at the Naval Amphibious School in Coronado, CA. In that tour, he provided medical coverage for the Naval Special Warfare Training Department and Second Class Dive School.

When the Naval Special Warfare Training Department stood up as the Naval Special Warfare Center, LT Giebner became a plank owner at the new Command. In his first two tours, he covered Basic Underwater Demolition/SEAL training for a total of five years. He then moved on to become the first Diving Medical Officer attached to Explosive Ordnance Disposal Mobile Unit THREE aboard Naval Amphibious Base, Coronado, CA.

LCDR Giebner was next ordered to outservice training in General Preventive Medicine and Public Health, having been accepted into the joint residency at San Diego State University and the University of California at San Diego. Upon completion of that training, he reported to Naval Environmental and Preventive Medicine Unit FIVE aboard Naval Station San Diego. In this tour, CDR Giebner helped to complete the Navy's investigation of malaria among U.S. Marines that had deployed to Somalia.

In 1994, CDR Giebner was selected to serve as Force Medical Officer for Commander, Naval Special Warfare Command. In that position, he managed a Medical Department of eleven physicians and over three

hundred SEAL Corpsmen and Diving Medical Technicians, supporting the Navy's most elite fighting force. He served two tours in this capacity, and during that time, was selected for promotion to Captain.

CAPT Giebner currently serves as head of the Hyperbaric Medicine Department at the Naval Aerospace

Medical Institute in Pensacola, FL. For the past two years he has also served as the Chairman of the Committee on Tactical Combat Casualty Care. This body was convened by the USSOCOM Biomedical Initiatives Steering Committee to update the guidelines for Tactical Combat Casualty Care.





Lessons Learned

Lessons Learned in Colombia

Richard E. Hines, 18D

It was hot. like standing on the sun hot, with a humid heat that made the sweat roll off your body as you sit in the shade. Just another J/CET (Joint/Combined Exercise for Training) in Colombia. We arrived in Arauca about a week before and had finally gotten settled. A couple of us spent some time at the clinic, getting to know the doctors and medics. They had a good setup for sick call, well supplied, but were poorly equipped to handle trauma. The “Docs” seemed knowledgeable and the medics had varied levels of medical training.

We began developing a working relationship with the unit medical staff when things got interesting one Sunday afternoon. We were working out when we heard the helicopters coming in. As we looked over the sandbag wall, we noticed that the ambulance was waiting by the helipad. Always looking for something interesting to do, we grabbed our aid bags and went to see what was going on.

As the helicopter landed, they started pulling wounded soldiers off the birds, throwing them onto the nearest vehicle, and driving them to the main hospital in town. Most of the wounded were still bleeding and no attempt at triage or treatment was being made. Not being able to stand by and watch, we quickly established a triage point to assess and prioritize casualties before sending them to the hospital. As the last casualty was sent off, the unit commander asked us if we would lend a hand at the hospital in town. It was a Sunday afternoon and he felt they would be overwhelmed with the 15 casualties we had just sent.

Upon arrival into country, we were briefed that under no circumstances were we allowed off the base as the threat assessment deemed it too dangerous. We looked at the company commander and sergeant major, and they both agreed that it was the right thing to do. We expected to get reamed for this, but felt that it was worth it. So off we went into town to see what we could do to help. The SFODA on site loaded up the gun jeeps for a tour of the town.

We arrived at the hospital still wearing our workout clothes (things never seem to happen when you are in full kit and ready to go). As we entered the ER, we saw that the staff was completely overwhelmed. The two worst cases were in the trauma room while the other treatment rooms overflowed into the hallway. We sorted ourselves out PDQ and started assessing the patients in the hallway. Various physicians were attending the patients in the treatment rooms. We worked on the simple things: ABCs, bandage replacement, and fracture immobilization.

As we worked, a host nation nurse exited the surgical area and asked if we had any albumin. I told her no, but I had hetastarch. She happily took the blood expander and asked if one of us could scrub in and assist the surgeon. Steve (the other SF medic working with me) went to get cleaned up and I continued treating patients in the hallway.

While replacing a pressure dressing on a brachial bleed, I looked up and could see into the main trauma room. They were doing CPR on a patient. He didn’t make it. As I was rigging a traction splint for a pulseless limb (femur fracture), the first surgical patient was wheeled past by some host nation medical personnel. Something did not seem right. When they bagged him, his belly seemed to be rising more than it should. I told them to recheck the ET tube placement. They said that they would. That patient died while waiting outside of the OR.

While I was occupied in the hallway, Steve assisted the surgeon repairing a lacerated femoral artery from a closed femoral fracture. This patient survived.

Later I saw another patient in the main trauma room on a ventilator. He expired sometime in the following hour. By the end of the day, seven of the fifteen wounded had died. Not a glowing testament to not so modern medicine. Most of those who died would have died regardless of treatment. Their wounds were catastrophic. However, a few should have survived if a reasonable mass casualty plan was

in effect to provide adequate and timely treatment.

That evening we washed up, unwound, and discussed what had happened. We found out that a car bomb had been detonated at a roadblock/checkpoint. As a result of this incident, we concluded that the biggest deficiency was the lack of a mass casualty SOP (standard operating procedure). The next day we dressed in our best BDUs, berets, shined boots, and attended the memorial service. After the ceremony, we spent several hours working out an SOP with the host nation medical staff. In short, we agreed to run the triage just off the helipad while the host nation doctors took the three or four worst cases to the civilian hospital. We would treat the overflow at the post clinic and send them to the hospital when we received word that they could handle them.

A few weeks later, our mass casualty plan was tested when we received a call from the Colombian aid station. They were expecting several wounded to arrive by helicopter. We grabbed our aid bags and got ready. I threw one of our "Helo Hanging Bags" (looks like a garment bag with pouches for equipment) onto one of the gun jeeps just in case. As the helicopter arrived, we found only two patients. They were riding patrol on a motorcycle when an explosive device was remotely detonated via cell phone. The bomb, an explosive inside a metal container, was surrounded by human feces, and wrapped in a plastic bag set by a lamppost. Both patients had multiple shrapnel wounds. The first soldier off the bird was fully conscious (alert and oriented X3) and stable. The second was unconscious and his dressings were seeping. His shrapnel wounds included wounds to the abdomen. He had good breath sounds and a rapid, shallow pulse. After getting authorization, we once again went to the hospital.

Two of us accompanied them to the civilian hospital. In the ER we decided to secure the unconscious patient's airway. Mike (another SF medic) assisted by applying suction and cricoid pressure. After a couple of failed attempts at intubation (due to inflammation, improper sedation by the host nation doctor, and blood/mucus [suction was used]) a host nation doctor volunteered to try. Following several minutes of manipulation, the doctor claimed victory. I used a CO₂ detector to discover he had missed. I quickly explained how the CO₂ detector worked, as they were unfamiliar with it. Tact was a difficult tool to find at this point. The patient's O₂ saturation dropped to 50 before the ET tube was correctly placed. As the patient was prepared for surgery, I

used one of my ET tube holders to secure the tube. This was a new item for me, and it took me a couple of tries to secure it correctly. This was another item that the host nation medical staff had not seen before. While the patient was waiting in the hallway, I saw a doctor checking out the E.T. tube holder. He was trying to figure out the bite block when he accidentally extubated the patient. We re-intubated in the hallway.

About two hours after we returned to our compound, the unit sent a runner to asking if we had a respirator. It seemed that the hospital only had one, and it was in use on another patient. As it would happen, we had a couple of Oxilators (a highly portable respirator). We figured that if they were not familiar with a CO₂ detector, they probably would not know how to work an Oxilator, so two of us got the OK to go and give a quick block of instruction. The hospital staff were impressed with the Oxilator's simplicity. We used the unit on our patient with the abdominal wound and it worked as advertised. He survived surgery and was evacuated to the capital where he survived an additional surgery.

The key learning points of our recent time in Colombia were:

- The need for a mass casualty plan as soon as you hit the ground;
- Quickly develop rapport with your host nation counterparts;
- Know how to use all of your equipment and be able to teach their use;
- Be your own harshest critic;
- If it looks screwed up, it probably is;
- AAR (after action review) everything; be honest in your critique; if you screwed up, feel bad, then don't do it next time;
- Stand your ground;
- Treat all training as if there are no do-overs. Because when it counts, there aren't.

SFC Richard Hines joined the Army in 1987 and attended the US Army's Infantry School at Ft Benning, GA. He was then assigned to 1/1 CAV, 1st Armor Division in Germany as an indirect-fire infantryman. While assigned to this unit he participated in operation Desert Storm. Upon return SFC Hines PCSed to Ft Stewart, GA with the 24th Infantry Division. In 1992, he attended SFAS and started SFQC in 1993. Upon graduation in 1995, SFC Hines attended language school and then was assigned to the 7th SFG(A). He remained on SFODA-783 until being assigned as the Battalion Medical Operations Sergeant. SFC Hines has deployed extensively throughout South America.



Fifteen soldiers converged on a vehicle in the Arauca province that appeared to be broken down near a checkpoint. The soldiers were changing guard shift. They approached the vehicle and it was remotely detonated, killing 7 soldiers and wounding 8, and killing 2 civilians.

One of the injured soldiers from the ambush with the human fecal bomb arriving on a Colombian MEDEVAC bird, on the main helo pad of the 18th Bde base. There is a doctor from the local hospital, 3 Colombian medics from the post clinic, and an 18D. The injured soldier was taken to the local hospital in the town of Arauca. Two Special Forces medics accompanied the wounded and helped with the triage.





JAMES DOUGLAS LOCKER

Rich Wallace

There was something different about the morning of June 9, 1968. As Doug McGill walked toward the Jolly Green 23 helicopter at Da Nang Air Base, he saw his best friend Sgt Jim Locker handing over his personal effects to members of the ground crew. That had never happened before.

Jim Locker, a graduate of the Sidney High School class of 1965, had been in Vietnam as a USAF Pararescueman for almost eleven months. Only six weeks remained of his twelve-month tour. He and McGill had just returned the day before from a ten-day "rest and recreation" leave that had carried them to some of the most exotic spots in Asia. It was time off well earned.

Locker had arrived at Da Nang in July 1967 after completing over a year of pararescue technician training that took him to Florida, Georgia, Texas, and Washington. His best friend during this intensive training was Don Johnson, who also served as a Pararescueman in Vietnam. They honed their skills as parachute jumpers, scuba swimmers, medical technicians, and jungle survivalists.

The job of a pararescue jumper, or "PJ," was one of the most dangerous in the Air Force. Rescue teams composed of a pilot, copilot, flight engineer, and a PJ manned the Jolly Green HH3E helicopters. It was their mission to rescue pilots shot down by the enemy. Sgt Locker and other PJs manned an M-60 machine gun, but more importantly, operated a 250-foot cable that was lowered to the pilot on the ground. A ride on the cable through the jungle canopy in search of a wounded flyer was a harrowing and common experience. Doug McGill recalled the ride down and back up "took forever, especially while trying to dodge small arms fire."

Locker's parents, Robert and Dorothy, remember he was always inspired to help others. "After our son graduated from high school in 1965, he went on a missionary trip to Mexico with Reverend Tyler of the Church of the Brethren," Mrs. Locker recalled. "He knew he would be drafted, so he enlisted in the Air Force where he could get special training."

His desire to serve others and a drive to be the best was evident to those around him. McGill recalled, "Jim was the most professional guy I ever met. He was all mission. We had a good time afterward, but he was the best under fire." McGill reminisced recently about their missions together. "Jim and I worked on many medi-vac flights together, tending the wounded. He treated the enemy the same as he did our guys." Don Johnson, who now resides in Hawaii, echoed the same thoughts. "Jimmy was a gentle soul, and one who would do anything to help someone else."

Doug approached Jim Locker as he was handing over his personal effects to the ground crew on the morning of June 9, 1968. "We talked, and I will never forget his last comment to me. He said, 'This is what it's all about...this is what we do.' He was so calm about it all."

The service record of Sgt Locker reveals the extraordinary lengths to which he took calmness and bravery. The Air Force awarded him the Distinguished Flying Cross for a mission on Christmas Day in 1967 when he helped save, then treated, two downed pilots. He won the Silver Star for gallantry on March 14, 1968, for attempting to rescue a pilot on three separate occasions until his chopper, riddled with fire, was unable to continue.

A May 4th incident, where he rescued two Special Forces soldiers as his aircraft was again heavily damaged, netted him another Silver Star. Sgt Locker also received a total of eight Air Medals for distinguished service in his eleven months in Vietnam. Several of these were for individual missions. He was presented two Purple Hearts for

wounds sustained in action and several medals from the Republic of South Vietnam, including the Cross of Gallantry.

His superiors noticed the extraordinary courage of Sgt Locker. The officer in charge of his unit, Capt Edward Hutchinson, wrote to his parents on April 14, 1968. The unsolicited letter commends their son's knowledge, professionalism, and courage. Capt Hutchinson ended his letter with a bit of cultural commentary.

"With all the hippies, flower children, and protesters, a young man like Jim restores my faith in his generation."

The PJs never discussed their commendations. Friends Doug McGill and Don Johnson only recently became aware of the extent of Jim Locker's medals. Doug said, "We never talked about it. Jim flew well over 100 missions, and we just did our job, survived, prayed, and woke up to another day," he recalled.

Sgt Locker and Sgt McGill were at the NCO Club the night of June 8 when someone approached Locker, reminding him he had a mission the next morning. The men left immediately.

The mission briefing the morning of June 9 revealed that a Marine Corps pilot, 1st Lt Walter Schmidt, had been shot down and was missing in action. Voice contact was established, and the pilot reported he had a broken arm and leg. The site was next to the Ho Chi Minh Trail in Laos, and enemy troops had circled the area.

A sister helicopter, the Jolly Green 22, tried to get to the crash site, but ground fire drove the bird away repeatedly. When it turned back because of low fuel, Jolly Green 23, carrying Sgt Locker, moved in. Intense hostile fire drove the aircraft back, but it returned with assistance. Escorting gunships tried to suppress the enemy ground fire as Jolly Green 23 hovered above the Marine pilot on the ground.

Bullets riddled the fuselage of the HH3E. Sgt Locker manned the left gunner's position of the copter, spraying M-60 machine gunfire and waiting for the signal to descend into the hail of bullets and rescue the pilot. He never got the chance.

Jolly Green 23, laced with rounds of fire, lost power and was trying to land when it was hit by a rocket propelled grenade, exploded, and crashed into the hillside below. The resulting fireball told everyone these heroes would not walk away from this scene. All four members of the crew perished.

Doug McGill knew within a half hour after

the mission began that something was wrong. "We heard they crashed. Everyone in our unit was crushed. Jim was such a great guy."

Don Johnson was on another mission 150 miles away when he received word of the crash. "I asked permission to fly directly to the Jolly Green 23 crash site, but the command refused. I promised myself right then that I would never rest until I brought Jimmy home to his parents," Master Sgt. Johnson recalled.

The passage of time has not dulled the sense of loss for McGill. "He was my best friend. We had just finished R&R the day before." One image is as sharp in McGill's mind as it was on that hot June morning in 1968. "I still will never forget Jim calmly handing out his personal effects. He was going about his business, and then he was gone."

His parents received a third Silver Star posthumously for his heroism in the incident that cost him his life. Sgt Jim Locker became the only USAF pararescueman in the Vietnam Conflict to earn three Silver Stars in one tour in country. It is believed the awards he earned in eleven months of service in Vietnam were more than any other military person accumulated in the history of Shelby County.

Jim Locker died doing what he like to do best, and that was helping people. His personal creed was that of the pararescuer. It states as follows:

It is my duty as a Pararescueman to
save a life and to aid the injured.
I will perform my assigned duties
quickly and efficiently,
placing these duties before
personal desires and comforts.
These things I do,
"That Others May Live."

The others who did live and returned to the states vowed never to give up the search for their comrades. Chief among them were Jim's good friends, Master Sargeants Doug McGill and Don Johnson. They continued to gather information and contact witnesses over the intervening three decades, hoping that some day an opportunity would arise to locate the crash site and return the remains of the men to their families. The location of the site in Laos dimmed the prospects for recovery.

The men never gave up. Hope was rekindled on October 12, 1991, when a villager in the area of the crash turned in partial remains and the dog tag of

Lt Rittichier, Jolly Green 23's pilot. He was the first Coast Guardsman killed in the war, and the only one never accounted for.

As our government negotiated for the right to conduct a search for the Jolly Green 23 and crew, McGill kept up his own search. He located a witness to the crash in 1998 who remembered the exact location. Wartime maps were found of the area. Aerial photos were taken by an A1E Skyraider of the same area. These photos were compared with modern day satellite photos, de-enhanced to remove the vegetation and then compared to the earlier photos. Computers were used to re-enact the flight of Jolly Green 23. They thought the location had been pinpointed, but searches there in 1998-99 turned up nothing.

Johnson kept contacting the joint task force investigating crash sites, reminding them about Jolly Green 23. His persistence paid off. A task force group was flying over the area in November 2002 when one of the investigators suggested they land near a small village. The pilot replied that they had stopped there, but the investigator persisted. The village chief denied knowing about any nearby crash site, but when the investigator asked about *helicopter* crash sites, the chief nodded his head and took them to the site of the Jolly Green 23, only a half- mile away. It was November 9, 2002.

The remains of the crewmembers were repatriated to US soil on February 14, 2003. *See next page.* Don Johnson was there when the C5A touched down at Hickam Field in Hawaii. "It was an incredibly moving ceremony, especially for me personally." Many former POWs were in the audience, as the date coincided with the 30th anniversary of the release of

American prisoners from the Hanoi Hilton.

The family of Jim Locker hopes his long journey home will be over soon. By his side when that time comes will be his parents, and good friends Doug McGill and Don Johnson. They will accompany him home to his parents, fulfilling promises both men made thirty-five years ago.

Jim Locker would not have wanted it any other way.



Editor's Note: The Fall 2001 Edition, Vol 1, Ed 3, was dedicated to Jim Locker.

Services for Sgt James D. Locker were held in Sidney, OH on 18 Oct 2003.

Rich Wallace was a US Navy diving officer from 1969-1972 and served aboard USS Hoist on the east coast. He graduated from Ohio Northern law school 1975 and began practicing law in Sidney, Ohio. He is now the senior partner in the firm of Elsass, Wallace, Evans and Schnelle.

Mr Wallace now writes local history on various issues; the Jim Locker article will appear in his second book, which is scheduled to be released November 1st.

Mr Wallace was in attendance at the service for Jim Locker and said it was the most moving event he had ever witnessed. More than 100 Vietnam vets appeared, uninvited but very welcome, from all over Ohio and two other states. An estimated 2,000 people were involved.



Jim Locker, Sammie Thompson, and Doug McGill
Photo courtesy of Doug Ross, Automatic Flight Control
Specialist, DaNang RVN, 1967-68



Locker House
A student dorm at Keesler AFB, MS named after

Jolly Green 23 Found!

This information found at:

<http://www.cc.gatech.edu/fac/Thomas.Pilsch/AirOps/JG23-found.html>

On 23 January 2003 **Joint Task Force-Full Accounting (JTF-FA)** in Hawaii announced that a **Joint Field Activity team** operating in Laos had discovered the wreckage of Jolly Green 23. The wreckage was found on 9 November 2002, but the announcement has been delayed pending notification of the families of the four crewmembers.

In November 2002, a Joint US and Lao investigation team from Joint Task Force-Full Accounting (JTF-FA) located the crash sites of the last two Jolly Green helicopters in Southeast Asia with unaccounted-for personnel onboard that had not been previously located.

The first site found was Jolly Green 23, an HH-3E with a crew of four, which was shot down on 9 June 1968 while attempting to rescue a downed Marine pilot. The crash site was found 600 meters inside Laos, 250 meters north of the former North Vietnamese Route 922, which ran into the Ashau Valley, 20 kilometers to the east. On 9 November 2002, while investigating the incident, an analyst from JTF-FA, an American-Lao service member who was acting as the Linguist, and a Lao official conducted an aerial reconnaissance in a helicopter of the suspected loss area in Laos, looking for signs of habitation, but none were found. On their return to the Base Camp, the analyst observed a small village six kilometers west of the suspected loss area and requested the team land and interview the villagers; however, the Lao official said a Joint Team had been to the village, Ban Koutai, on two previous Joint Field Activities and the villagers did not know anything. The analyst insisted they land at the village and the Lao official relented. Once in the village, the villagers told the two Americans they knew of two crash sites near the village they had not told the previous teams about because they were scared. After the six other team members flew to the village, the team searched for the crash site in the 12-foot deep elephant grass. Eventually, the villagers were able to relocate the crash site, with the HH-3 rotor head being the prominent feature.

A search of the area found three boot soles and other evidence the crew was onboard the helicopter when it crashed. The crash site is currently being excavated on the 77th Joint Field Activity, which began on 17 January 2003.

The remains of the four crewmembers were repatriated to US soil on 14 Feb 2003.

The second aircraft found was Jolly Green 71, an HH-53B with a crew of six which was downed on 28 January 1970 by a missile fired from a MIG-21 while waiting to refuel during a mission to recover an F-105 pilot shot down in North Vietnam.

The map, which can be viewed at <http://www.cc.gatech.edu/fac/Thomas.Pilsch/AirOps/Maps/JG23LocationMap.jpg> clearly shows the difficulty in collaborating the various accounts of a combat aircraft loss. We salute the staff of Joint Task Force-Full Accounting and particularly the members of the 76th Joint Field Activity for their perseverance and determination. They never stopped believing that they would find Jolly Green 23 and its crew.

Our thoughts are refocused on the sacrifice of the four crewmembers and their families.



**EXCERPTS FROM "WARRIOR/HEALER:
THE UNTOLD STORY OF
THE SPECIAL FORCES MEDIC"**

Editor's Note: Len Blessing Jr has spent the last three years on a project to write a book that will tell the untold story of "The Special Forces Medic." We have agreed to publish the excerpts of Len's book, not to advertise it, but, because we believe strongly in his desire to document and preserve the complete history of Special Forces medical operations. The JSOM plans to provide "Lessons Learned" from all levels of SOF medical providers as well as record SOF medic stories for historical purposes.

The JSOM is YOUR tool to share medical information and experiences unique to this community. We will carry the excerpts from chapters 2 & 3 in the Fall Edition of the JSOM.

mdd

The following excerpts from "Warrior/Healer: The Untold Story of the Special Forces Medic" represent three years of painstaking yet exhilarating experiences encountered during the process of documenting a remarkable story. Initially dubbed, "Project BacSi," the manuscript has evolved much like the SF medic and his training. The original idea was to document the experiences, exploits, and accomplishments of the Vietnam War era SF medic. Just two weeks into the quest it became evident that to restrict the project's scope to that time frame, remarkable as it is, would be an extraordinarily huge error and be an injustice to ALL Special Forces medics, past and present. Each medic from 1952 to this day has contributed to the growth and accomplishments of Special Forces medical operations.

While I want the excerpts to generate excitement and anticipation for the eventual publication of the book, the purpose of having the JSOM print them is not self-serving. The main objective is to spread the word about the project and garner more support and participation to accomplish a greater goal. Currently, over 200 SF medics, doctors, and team members have joined to assist me with this mammoth project. The range of generations represented covers the first class of medics with the original 10th Group to a handful of active duty members. Obviously, it is impossible to cover everyone and everything in just one book, but who said we have to stop at just one?

This leads to the greater goal alluded to earlier. The extended mission of this project, self imposed and assigned, is to collect, categorize, document, and preserve the complete history of Special Forces medical operations. This can only be accomplished with your support and participation. It is my hope that this article and the book will inspire and encourage each of you to climb aboard and contribute in any way you wish to reach this goal.

Please feel free to contact me.

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EXCERPTS CHAPTER 2: LAOS- DOC IN ANY LANGUAGE

SGT Ned Miller, who served two tours in Laos, one during HOTFOOT and one during WHITE STAR, described the reliance of the teams located in remote locations upon those pilots:

“Visualize Nam Tha as a little Dien Bien Phu: you would not be far from being correct, socked in for about six months out of the year on a flat valley surrounded on all sides by mountains. Our Air America helicopter pilots told us this: ‘No matter how the weather is, no matter if you’re socked in, we can get to you by following the rivers. We can get to you anytime.’ We noticed these guys’ shoes; every one of the Air America pilots had Marine and Navy type boon-dockers on. I used to be a Marine and I knew that was their shoe! Turned out ‘yes’ that was a squadron of Marines ‘in the black’ operating with Air America...After they came in and saved our fanny, we went in and bought ‘em drinks all night!”¹



H-34 Helicopter being greeted and unloaded in Laos.
Circa 1961 (Photo provided by Earle Peckham)

The admiration and gratitude for the brave pilots is evident as Miller continues: “You get a team out there 75 clicks (kilometers) from the nearest friendly, and they’d get over-run or they’d get hit hard and the friendly troops run; that leaves four or five Americans to fight their way out on their own. That’s when good chopper people are worth their weight in gold.”² The limited outside support added to the importance of the medic’s ability to perform as a

“substitute doctor.” If something serious should happen to a team member, the team medic must be prepared to provide treatment until the patient could be evacuated. Attention from a physician was only accomplished through an emergency evacuation to either Clark Air Base in the Philippines or the Seventh Day Adventist Hospital in Bangkok, Thailand.

The introduction of Special Forces teams to Laos heralded a new age of warfare for the US. The new and relatively alien concept of advisor/counter insurgency warfare was generally an untested change from the original doctrine of teams operating behind enemy lines in conventional warfare. The initial contingent to Laos, referred to as the first rotation, was selected from the 7th Special Forces Group (Abn) at Ft Bragg. The teams underwent a two-month, pre-mission training period prior to their departure for Laos June 24-31, 1959. The nature of their mission and the personnel make-up of the teams was a variation from the Special Forces “A” Detachment structure. The traditional twelve man A Team configuration was modified to eight men to correspond with the Field Training Team (FTTs) composition agreed upon with the French. The configuration provided just one medic per team, as opposed to the authorized strength of two. The medic’s role increased significantly, because of the added responsibility for all medical duties relating to his team members’ health and the medical training to be provided for the Royal Lao Army medics at the training centers. Standard cross training of all detachment members would compensate for the loss of the second medical specialist.

Hardy recalls that during the day he felt relatively at ease, in spite of the strange surroundings and language barrier, while conducting sick call and dispensing medicine. The nights were completely different. There he was, stuck out in the middle of the jungle in a strange land and its people, with no companion. There was nobody he could talk with. The morning light could not come soon enough. He remembers one night specifically, where the feeling of vulnerability struck especially hard. Some tribesmen had come to get him in the middle of the night. It took some time to determine through gestures and the convoluted process of interpretation for him to understand what the problem was. A man was having trouble breathing. He grabbed his tracheotomy kit and a few other items to head out into the night to a nearby village.

“We had practiced [tracheotomies], but I had never done it on a person, at night, with no assistance and a little flashlight. I got all this together and thought to myself, ‘Hey! If this guy dies, I am all alone. What is going to happen to me?’ I really had no idea what to do. For some reason I took a syringe and put some epinephrine (a synthetic adrenaline) in it and went up the hill. When we got there, the guy was laying on the floor, very difficultly breathing, but breathing, like an asthma attack. The witch doctor was sitting on a chair sprinkling beads of water on his forehead.”³

Hardy was faced with one of the tenuous situations that medics were trained for and warned about. A tracheotomy, even performed by a doctor under the best conditions, is a skilled procedure. An illness such as this one was pretty severe and found the Shaman in a position of not knowing what exactly could be done. His call for the American medic, the man who was “stealing his thunder,” to help was a last resort. The maturity and the training of a medic were put to test in such situations. Hardy had never heard of anyone having an asthma attack in the area. It was purely an assumption, based on the diagnosis of symptoms he had learned during training. It was a very dramatic scene, to say the least... unable to talk with the patient, having no medical history to refer to, and alone with no outside support. If he succeeded in helping the man, it would be a major victory and a success in gaining the confidence of the people. If he failed, one could only guess. Hardy began to inject the syringe he had filled with epinephrine. By the time he was removing the needle, the man had started breathing easier. “I had made a lot of points in that area.”⁴ From that time on, everyone in that village called him *Tan Maw*, doctor in Laotian. By practicing what he had learned and not attempting the more difficult treatment method first, Hardy had won over the respect and the trust of the village and kept in line with the medics’ creed, “Do No Harm.”

WHITESTAR teams most often operated as split detachments. This left one medic per team operating in a dual medical and infantry role. Teams were also experiencing higher levels of enemy activity as the war in Laos continued. The heightened exposure to hostile fire and the differences between the HOT-FOOT and WHITESTAR missions punctuated in early March 1961. Captain Walter Moon’s FTT-59,

attached to the 6th Royal Laotian Army Battalion d’Infanterie, at Ban Pha Home were engaged in a running battle against Kong Le’s troops on the Plain of Jars. On April 22, 1961, at Phou Teaso, the battalion came under heavy artillery fire and was subsequently surrounded and overrun by the Pathet Lao. Captain Moon was captured during the initial attack. SFC John Bischoff (medic) and SGT Gerald Biber (radio operator) attempted a breakout by climbing aboard an armored car headed south on Route 13. “According to Lao survivors, they crouched behind the turret, but the car came under heavy grenade attack. SFC Bischoff fired a machine gun from the vehicle until he was shot through the neck and killed. SGT Biber had already been wounded and was apparently killed by stick grenades thrown against the armored car.”⁵ SGT Orville Ballinger (demolitions) had escaped into the jungle with other Lao soldiers. Seven days later, the Pathet Lao captured them several miles down river on a boat they had found. SGT Ballinger, held with Captain Moon, was eventually released in August 1962. He reported that CPT Moon attempted to escape twice from captivity. Wounds received to the chest and head during his final escape attempt caused him to become mentally unstable. After several long months of mistreatment, Captain Moon was executed in his jail cell in Lat Theoung on July 22, 1962. The bodies of Sergeants Bischoff and Biber were never found and remain missing to this day.

The training that Special Forces teams were now conducting with the indigenous tribes presented situations that required the medic to fulfill a dual role of soldier and healer. As an example, while on patrol with a company of Kha Tribesmen, Maggio earned the Combat Infantry Badge (CIB). An excerpt from the commendation describes how the medics often found themselves performing as an infantry leader.

“Due to operational commitments of the detachment in the Kha Program during the period 1 April - 25 September 1962, it was necessary to assign SFC Maggio as Senior Infantry Advisor to Company K8, Kha Tribesmen. During this period SFC Maggio accompanied K8 on all operations and was under enemy small arms fire on numerous occasions and specifically on 30 August 1962, in the vicinity of Bon Tayune, Laos, while accompanying a combat patrol that was ambushed by Communist Pathet Lao forces.”⁶



Laos, 1962. Left to Right: unidentified, SGT Charles Hiner (Radio), SFC John Edmunds (Weapons), SFC Alan Maggio (Medic)
(Photo provided by Al Maggio)

It must be reiterated and understood that all medics are not only capable, but also expected to perform in this dual capacity. Many of the medics found themselves in similar situations, but were never awarded medals or recognized for their acts of bravery. This was a part of being Special Forces. Most of the men were operating in highly sensitive areas. Bringing attention to their deeds would have exposed much of what they were doing and where they were operating and could have jeopardized their missions.

The language barrier, coupled with the illiteracy rate, created their fair share of problems. To overcome these problems, the use of symbols became the standard procedure for communicating directions and

instilling concepts for which the villagers simply didn't have any comprehension. Mimicking actions was a common language to get a point across to the diverse cultures. "They watch you, what you do, and this is the way they learn,"⁷ said Wyngaert. He also recalled that to teach them when to take medicine at certain times, like one pill three times a day, presented a bit of a challenge. The people did not understand clocks and time. However, they did understand differences in the day. The sun rising, the sun all the way up, and the sun setting. That is how the medic taught them to take pills. "The way you have to explain it to them is the sun comes up, you take a pill. When the sun is all the way overhead, you take a pill. When the sun goes down, you take a pill. Pointing at the medicine, this is your medicine, you take it three times a day."⁸ Wyngaert also found out very quickly that it was hard to make them understand that if a little was good for them, that didn't necessarily mean, "a whole lot will be real good. If you gave them medicine, say for a week to ten days, they used to take it all in three days! I used to give them enough for two days and have them come back. Otherwise, they would take it all at one time, if you did not watch them."⁹

REFERENCES

1. Miller, Ned L., Interview with author, October 18, 2000
2. Ibid.
3. Ibid., 5-6
4. Ibid., 6
5. <http://www.pownetwork.org/bios/b/b390.htm>
6. Appendix 5D; Report from ranking NCO
7. SGM Wyngaert, Julius "Dutch," Interview with Dorogi, Louis, February 27, 1976, 9
8. Ibid., 9
9. Ibid., 9

EXCERPTS CHAPTER 3: DE OPPRESSO LIBER

Inhabiting the Highlands are the primitive mountain tribes collectively referred to as the Montagnards, or "Yards," as the men of Special Forces respectfully nicknamed them. They comprise the largest minority group in South Vietnam.¹ There are more than two dozen tribes, numbering over 600,000,² representing a variety of cultures and languages that differ from tribe to tribe, region to region, and sometimes village to village. Special Forces found the ideal paramilitary recruit in these rugged, fast learning, and likable people. Their receptiveness

to Special Forces assistance was sparked by the men of SF, who offered them a way to defend themselves from the exploitation they had suffered for years by both the Vietnamese and Viet Cong. Vietnamese attitudes toward the mountain tribes are based upon deep traditional beliefs that the Montagnards are inferior savages or *moi*. The animosities between the two groups is a source of contention and discontent that is centuries old and is far too complicated to be properly and fairly covered here, but must be recognized for its overall implications.

The Montagnards viewed both sides of the conflict with disdain and suspicion. The VC coerced the people through terror and ideologic doctrine. The South Vietnamese government attempted population control through multiple incarnations of unpopular resettlement programs. The South Vietnamese government had also seized land and weapons from the hill tribes. The Montagnards desire for autonomy was considered an internal security threat to the struggling government in the South. Montagnards are not considered Vietnamese and are openly discriminated against. The differences and difficulties among the cultures cannot all be placed on Vietnamese attitudes. The Montagnards lived a vastly different lifestyle and their beliefs hindered assimilation in the Vietnamese society and government that they felt was not representative of their interests. The refusal by both parties to cooperate as one people of a nation is a very complex issue that continuously hampered the war effort for many years to come. The Montagnards were caught in a brutal tug of war that they really had no desire to be a part of and would cooperate with whichever interest they felt most advantageous. They just wanted to live in peace and harmony where their ancestors had dwelt.

The “Nation Building” program that began in the Central Highlands would require a strong government effort to solve the problems of the people and alleviate their economic hardships. A stable government, free of corruption, would greatly impact the economic and cultural difficulties encountered by a large portion of the population. The improvements could gain popular support and assist in eliminating the attraction to the communist insurgents. President Kennedy believed that the way to fight communism in threatened impoverished countries was to improve the people’s quality of life. Special Forces were chosen as a means to deliver public safety, health, and educational solutions to those countries.

Support from the local population is the key ingredient to waging successful guerrilla warfare. A guerrilla insurgency “needs people for both moral and physical support for most of its needs except for special items that they will receive from an outside source or capture from the enemy. Food, clothing, recruits, information, occasional transportation, and shelter must all be locally available. Outside support is also a highly important ingredient for guerrilla success. Its absence or loss can be fatal to the guerrilla cause...Closely related to the need for outside sup-

port is the value of contiguous territory for sanctuary.”³ Difficult terrain helps neutralize a powerful enemy’s technology and superior numbers; it also provides the guerrilla his opportunity for blending with the local population. An inability to identify the enemy increases the likelihood for the more conventional opponent to commit repressive and/or violent acts against the local populace it is attempting to protect. When such acts are committed it causes additional dissatisfaction among the population and creates further exploitation opportunities for the guerrilla.

Selective terror employed by the guerrilla to encourage cooperation is much more effective simply because they are a part of the population. Conversely, conventional units arrive and employ tactics of intimidation and then leave. In this situation, the local population will appear to agree with whatever is desired of them – they know that if they do, they will be left alone. The guerrillas’ carefully planned acts of terror and atrocity are heeded for the opposite reason. They will not go away, they are always there, and they will carry out their threats of harm with little to no regard for the “right” and “wrong” according to the accepted “rules” of conventional war.

Typically, a few VC would move into a village to live and work along with the villagers. This small group of VC is commonly referred to as “political cadre.” They followed the customs and traditions of the village, helped clear land, harvested crops, and talked of the autonomy the villagers would have after the revolution and the South Vietnamese government was defeated. This idea had great appeal to the Montagnards, who were considered savages, second class citizens at best, by the lowland Vietnamese. After gaining their trust, the VC cadre would start requiring “rice taxes” to feed the local VC troops, and villagers were forced to attend orientation classes, develop intelligence networks, and provide military conscription to support the VC. The villagers, knowing the South Vietnamese government and its army would not come to protect them, in most situations reluctantly began supporting the VC for fear that the cadre’s selective terror to “encourage” cooperation would be visited on them and their loved ones next. Counter guerrilla or insurgency efforts will only succeed if they are capable of separating “the guerrilla from the population, cut off his outside help, cast doubt on the validity of his cause, and convince the population the worthiness of the government.”⁴

Special Forces operations with the indige-

nous people of a country in which they operate provides military training and humanitarian aid in an effort to offer improved conditions by teaching self-help through training. It is not intended as a giveaway program. In 1969 the word “Vietnamization” became a new revolutionary idea and catch phrase in the media. The term described that the conduct of the war and the operation of the government of South Vietnam were to be determined by the Vietnamese people. Special Forces had been doing this since its arrival in Vietnam.

To “out guerrilla the guerrilla,” the small A Detachment went to live among the people, just as the VC did, in an attempt to gain their trust. They brought with them tangible proof that their intentions and what they were saying would benefit the tribe. Initially through medicine, SF gave the Montagnards the impression that the government of South Vietnam was helping them. It is often the SF medic who first comes into contact with the local population and displays concern and care by attending to their medical needs. This consists mainly of conducting a routine



Villagers lining up for medical care during MEDCAP in RVN run by SFC Paul Campbell. Circa 1964

Photo provided by Paul Campbell

sick call for headaches, sore feet, open cuts, dental problems, diarrhea etc. This simple human compassion opens the path to more comprehensive solutions to the diseases and illnesses present in the village.

Working intimately with the villagers provided a way to directly compete with the VC. The use of a small group of cadre to interact, on a daily basis, with the villagers to slowly gain their allegiance could also work against the Viet Cong. The trust and

friendship of the Montagnards would be secured by explaining the benefits of supporting the South Vietnamese government and then backed with tangible results that they could understand and see directly affecting their lives. The importance of the medical and social programs devised and implemented by Special Forces medics cannot be underestimated. William Colby wrote, “The medical aid program, the agricultural advice and assistance and the physical benefits of participation in the program were a substantial element in its appeal to [the highlanders] and that they contrasted with the slim benefits the enemy could offer.”⁵

What may best describe the importance of the team medics’ contribution to the overall mission and the high degree of respect and admiration bestowed upon them by those that knew them and their capabilities, is the length Colonel Gilbert Layton went to, to defend their abilities against criticism and questioning. Statements made by COL Layton, during an interview, depict the importance of the Special Forces enlisted medic receiving training far above the level of the conventional Army medic to prepare him to operate in an unconventional environment. The SF medics at Buon Enao were subjected to charges of impropriety:

“AMA representatives once visited the medical facilities at Buon Enao and charged that the medics were performing surgery, amputations, and other complicated procedures that they were unqualified to do. Layton told the doctors that if the AMA wanted to send highly qualified certified physicians to the Highlands, the SF medics would curtail their activities. Layton never heard from the AMA again.”⁶

This is not to imply that the SF medic is a rogue element, performing surgical procedures at will or is equally qualified as a physician or surgeon. To the contrary, a medic is constantly reminded he is not a doctor and should always work within his capabilities, sophisticated procedures are performed only when it is the only option available.

The hectic pace of men returning from deployment and then being re-deployed with the increased demand in late 1962 and early 1963 for SF teams in Vietnam required re-deploying experienced men into the field almost immediately upon return from another mission.

For example, SFC Clarence McCormick was sent to Vietnam just 26 days after returning from Laos. He arrived at Cung Son in early November 1962. He was the senior medic and SP5 Charles L. Biggers was the junior medic with Detachment A1/224 from November 6, 1962 to May 10, 1963. He relieved departing medics, SSG James “Boo” Alford and SP5 Francis C. Fitzgerald with Detachment A1/311, whose tour at Cung Son lasted from May 28, 1962 to November 29, 1962. The two teams slightly overlapped each other’s 6 month TDY, giving Alford time to brief McCormick and show him the outlying areas where sick calls had been conducted and a nursing program instituted.

Working so intimately with the people also placed the team in close proximity to the enemy in a way that can be unsettling. It was often difficult to determine who the enemy was. The Montagnards were not the only people who sought the much-needed medical care. Viet Cong troops also had to contend with the diseases and injuries sustained while operating in the jungles. The VC were a very clever and dedicated adversary. They devised many schemes to obtain much needed medicine and supplies. Alford recalls how a person would come in to sick call and describe symptoms of a specific illness, in great detail, and they would be given the appropriate medicine to treat the symptoms. This scenario was repeated throughout the day. Ten to fifteen people with identical problems. After a while this seemed a bit suspicious to the medics and it was surmised that the patients were taking the medicine back to the VC. To remedy this, any patient given medicine at sick call was required to take the medicine when it was dispensed. In turn, the VC countered this new rule by having the patient place the pill under their tongue and swallowing the water, but not the pill! They would hold it under their tongue and then spit it out to give to the VC after they left the camp. The VC were coaching the people on symptoms, such as malaria, that their own troops were encountering in order to get the needed medication.

“The VC even got very bold in their attempts to obtain medicine, especially for malaria. They would come into camp and tell all the symptoms, everything except which exact pill they wanted! So it got to be kind of comical after awhile. We used to play games with the VC, use the old baking soda and sugar capsule type thing.”⁷

As America’s involvement in Vietnam grew, the mission of Special Forces steadily gravitated

toward seeking, training, and supporting men capable of becoming effective guerrilla fighters. Conventional military leaders never truly grasped the cultural complexity of their allies. Campbell stated bluntly, yet sadly, “Once MACV took over, the original CIDG concept, as originated by COL Layton, started downhill. SF operations became more structured along conventional lines.” Campbell explained, “The West looks at resolving problems and issues in a time frame of no more than a life time. We do everything with speed. In the East, because of their strong Buddhist culture and beliefs, they put no limits on time. A person’s lifetime is but a short breath in their concept of reincarnation.” It was the men of Special Forces who were called upon to work with the diverse ethnic and cultural populations. Even with the shift in tactics, the philosophy of treating and training the villagers in basic medical topics remained a cornerstone of Special Forces operations. Campbell said of the medics who followed behind him, “The A Teams are the ones who really carried the ball as far as the full development of the project. I was there just on the



SFC Paul Campbell conducting a MEDCAP with counterpart VNSF member. Circa 1964.

(Photo provided by Paul Campbell)

organization of the original project.”⁸

REFERENCES

1. See Map 1: South Vietnam Ethnic Distribution
2. Area Handbook for South Vietnam, 1967
3. Simpson, Charles, III, *INSIDE THE GREEN BERETS*, Presidio Press, ISBN 0 89141-163-1
4. *Ibid.*, 9
5. Gitell, Seth, Edited by Stephen Sherman, *Broken Promise*, Radix Press, Houston, ISBN: 0-9624009-7-1; 39
6. Gitell, Seth, Edited by Stephen Sherman, *Broken Promise*, Radix Press, Houston, ISBN: 0-9624009-7-1; 44
7. *Ibid.*, 23

SOF RELATED BOOK LIST

The following is an compiled list of SOF related books recommended for your reading by those that were there. The list is complements of Len Blessing with the assistance of all of you. If anyone has other books they would like to add to the list, let us know. I have not read each selection personally. It's intent is to present a concise list of the vast array of reading material available that pertains to the mission of Special Operations - both past and present.

Every attempt is made to maintain the list's integrity with respected and legitimate works. Readers who feel a selection does not merit inclusion are encouraged to contact me with disputes. I also strongly encourage readers to write a short review for the books they have read and/or have personal first hand knowledge concerning a specific selection. This will help maintain a high degree of content validity.

I am happy to submit your comments/reviews on your behalf if you prefer to not write directly to the JSOM editor staff. I can be contacted at lenblessing@comcast.net.

TITLE	AUTHOR
15 Months In SOG	Thom Nicholson
ABU NIDAL, a Gun For Hire; The Secret Life Of the World's most Notorious Arab	Anonymous
A Concise History of US Army Special Operations Forces, with Lineage and Insignia	Geoffrey T. Barker
A Very Short War (about the last gunfight and the last sacrifices of the Vietnam-era war in the recovery of the crew and ship SS Mayaguez in 1975)	John F. Guilmartin, Jr
Advice and Support: The Early Years	Ronald H. Spector
Airborne and "Special Forces" (non-fiction, good quick references, especially for family or civilians)	Hans Halberstadt
Battle for the Central Highlands: A Special Forces Story	George E Dooley
Beyond Nam Dong	Roger Donlon
Blackjack -33: With Special Forces in the Viet Cong Forbidden Zone	James C Donahue
Blackjack -34 (Previously titled "No Greater Love")	James C Donahue
Bravo Two Zero	Andy McNab
Break Contact Continue Mission (fiction)	Raymond D. Harris
Bunard: Diary of a Green Beret	Larry Crile
Che Guevarra on Guerrilla Warfare	Ernesto Gueverra
Code Name Bright Light	George J. Veith
Code Name:Copperhead	SGM Joe R. Garner (Ret.)
Covert Warrior	Warner Smith
Edward Lansdale: The Unquiet American	Cecil B. Currey
Elite Warrior	Lance Q. Zedric
Fighting Men: Stories of Soldiering	Jim Morris
Five Years To Freedom	James N. Rowe
From OSS to Green Berets	Col. Aron Bank (Ret)
Ghost Soldiers: The Epic Account of World War II's	Hampton Sides
Greatest Rescue Mission (Ranger operation to free POWs in the Philippines)	
Green Berets At War	Shelby L. Stanton
Green Berets at War: US Army Special Forces in Asia 1956-1975	Shelby L. Stanton
Green Berets in the Vanguard: Inside Special Forces 1953-1963	Chalmers Archer Jr
Guerrilla Warfare: On Guerrilla Warfare	Mao Tse tung

TITLE	AUTHOR
Hard To Forget	Steven M. Yedinak
Hazardous Duty	MG Jack Singlaub (Ret)
Ho Chi Minh: A Life	William J Durker
In The Village of the Man	Loyd Little
Inside Al Qaeda, Global Network of Terror	Rohan Gunaratna
Inside Delta Force: The story of America's elite counterterrorist unit	Eric L. Haney
Inside the Green Berets: The First Thirty Years	Charles M. Simpson III
Killing Pablo: The Hunt for the World's Greatest Outlaw (Read by current SF medic that knows some of the guys involved in getting Pablo; told him that the book is pretty accurate, except what happened in the actual killing.)	Mark Bowden
Laos: War and Revolution	Nina S. Adams (Ed.)
Logistical Support of Special Operations Forces During Operations Desert Shield and Desert Storm	Donald W. Betts
Long Shadows (fiction)	Kent White
Lost Crusade: America's Secret Cambodian Mercenaries	Peter Scott
MAC-V-SOG Command History Vol. I & II	Charles F. Reske
Medal Of Honor	Roy P. Benavidez
Mike Force	L H. Burrus
Mobile Guerrilla Force: Wth the Special Forces in Warzon D	James C Donahue
My Secret War	Richard S. Drury
Night Jungle Operations	Thomas B. Bennett
Night of the Silver Starts: The Battle of Lang Vei	William R Phillips
No Surrender (Japanese soldier who evaded capture and survived 30 years in the Philippines; it's a great book about perseverance and commitment to warrior ideals)	Hiroo Onoda
Once A Warrior King: Memories of an Officer in Vietnam	David Donovan
One Day Too Long	Timothy N. Castle
Parthian Shot	Loyd Little
Peoples' War, Peoples' Army	Vo Nguyen Giap
Perilous Options: Special Operations as an Instrument of US Foreign Policy	Lucien S. Vandenbroucke
Phantom Warriors, Book II	Gary A. Linderer
Phantom Warriors: LRRPs, LRP's, and Rangers in Vietnam, Book I	Gary A. Linderer
Prairie Fire (Fiction)	Kent White
Project Omega: Eye of the Beast	Ernie Acre
Rangers at War: Combat Recon in Vietnam	Shelby L. Stanton
Reflections Of A Warrior	Franklin D. Miller
Rescue Of River City	Drew Dix
SF Bibliography: Collection of articles and other readings with Special Forces topics	Radix Press/Dan Godbee
Shadow War: Special Operations and Low Intensity Conflict	H.T. Hayden
Shadow Warriors: Inside the Special Forces	Carl Stiner and Tomy Koltz
Shadows on the Wall (An Australian SAS trooper who participated in B-36 "Rapid Fire" activities. Also lists a short index on books that pertain to B-36.)	Stan Krasnoff
Sideshow (The US, Khymer Rouge & Cambodia)	Robert Showcross
SOG and SOG Photo Book	John Plaster
SOG: Volume 1	Harve Saal
Soldier Under 3 Flags	H. A. Gill (PB)
SPEC OPS: Case Studies in Special Operations Warfare: Theory and Practice	William H. McRaven
Special Forces 1941-1987	LeRoy Thompson
Special Forces of the US Army	Ian Sutherland

TITLE	AUTHOR
Special Forces, the US Army's experts in Unconventional Warfare	Caroll B. Colby
Special Forces: A guided tour of US Army Special Forces	John Gresham
Special Men and Special Missions: Inside American Special Operations Forces, 1945 to the Present	Joel Nadel and J.R. Wright
Spies And Commandos	Kenneth Conboy
Strategy and Policy Background Umbrella Concept for Low Intensity Conflict	Alex & Hamilton Booz
Street Without Joy (French in Indochina; Good groundwork for SF in Vietnam)	Bernard B. Fall
Talking with Victor Charlie: An Interrogator's Story	Sedgwick D. Tourison, Jr.
Tam Phu	Leigh Wade
The Chindit War (Good section on Merrill's Marauders)	Shelford Bidwell
The Company They Keep	Anna Simons
The Devil's Brigade	Robert H. Adleman
The Dying Place (Fiction)	David A. Maurer
The Green Berets	Robin Moore
The Green Berets in Vietnam, 1961-71	Francis J. Kelly
The Last Confucian	Denis Warner
The Making of a Quagmire	David Halberstam
The Montagnards of South Vietnam	Robert L. Mole
The New Legions	Donald Duncan
The One That Got Away (This is the other half of the Bravo Two-Zerostory [a very good read on human endurance and tenacity])	Chris Ryan
The Politics of Heroin in SE Asia (Essential reference for understanding the Golden Triangle)	Alfred McCoy
The Protected Will Never Know	Leigh Wade
The Raid	Benjamin F. Schemmer
The Ravens (The classic about our Bird Dog brothers)	Christopher Robbins
The Rescue Of Bat-21	Darrel D. Whitcomb
The Road to Arnhem: A Screaming Eagle in Holland	Donald R. Burgett
The Secret War Against Hanoi: The Untold Story of Spies, Saboteurs and Covert Warriors in North Vietnam	Richard H Shultz Jr
The Secret Wars: A Guide to Sources in English, Volume II, Intelligence, Propaganda and Psychological Warfare, Covert Operations, 1945-1980	Myron J. Smith
Through Our Enemies Eyes Osma Bin Laden, Radical Islam and the Future of America	
Tragedy in Paradise: A Country Doctor at War in Laos	Charles Weldon MD
Umbrella Concept for Low Intensity Conflict	Alex & Hamilton Booz
Unconventional Operations Forces of Special Operations	Mark D. Boyatt
Uneasy Warrior	Vincent Coppola
Urgent Fury: The Battle for Grenada	Mark Adkin
U S Army Special Operations in World War II	David W. Hogan Jr.
U S Special Forces	Peter McDonald
U S Army Special Forces 1952-84	Gordon L. Rottman
U S Army Handbook for North Vietnam Dept of Army: 550-57	
U S Army Handbook for Cambodia Dept of Army: DA Pam: 550-50	
U S Army Handbook for Laos Dept of Army: DA Pam: 550-58	
U S Army Handbook for South Vietnam Dept of Army: DA Pam: 550-55	
U S Army Handbook: Minority Groups in the Republic of Vietnam: Ethnographic Series Dept of Army: DA Pam: 550-105	

TITLE	AUTHOR
Vietnam Above The Tree Tops: A Forward Air Controller Reports	John F Flanagan
Vietnam in American Literature	Philip H. Melling
Vietnam Military Lore: Legends, Shadow and Heroes	Master Sergeant Ray E Bows (Ret)
Vietnam Order of Battle: A Complete, Illustrated Reference to the US Army and Allied Ground Forces in Vietnam, 1961 - 1973	Shelby Stanton
Vietnam Studies: Command and Control 1950-1969	
Vietnam: A History	Maj Gen George Eckhardt
Vietnam: The Origins of Revolution	Stanley Karnow
Vietnam: The Secret War	John T. McAlister Jr.
War Stories of the Green Berets: The Vietnam Experience	Kevin M. Generous
War Story	Hans Halberstadt
Who's Who From MACV-SOG	Jim Morris
	Stephen Sherman



I just received my copy of Vol 3, Ed 2, Spring 03.

This is an outstanding issue and I would like to purchase an additional 3 copies, if possible, to show a few of my friends in the SOCOM and AMEDD what they are missing in this exceptional journal!

Thank you,
Kevin C. Miller
1LT, AN, USAR

The content and layout of the JSOM is excellent. You have combined top quality production with readable, useful information. I suspect that other SO journals will be using your example to upgrade their own publications. The quarterly edition is about right, but you might want to consider setting up an e-mail list for the distribution of "hot-button" information on a monthly or as needed basis.

Best regards,
WOJO
Alex D. Wojcicki, Maj, USA (Ret)
Librarian and Archivist

Your journal is EXCELLENT and I wish to add it to my personal library. Thank you.

John S. Allerding, LTC, MC, USAR
Staff/Battalion Surgeon
412th Civil Affairs Battalion (FID/UW)

Apologies

To CAPT Woods, NAVSPECWARCOM Component Surgeon

In the Summer 03 edition we erred in welcoming CAPT Woods to AFSOC instead of NAVSPEC. So sorry CAPT Woods. Welcome to NAVSPECWARCOM and USSOCOM!

To Len Blessing

Len writes: My compliments to you and all staff for an outstanding job, as usual. I've already read mine cover to cover. I appreciate your editor's note introducing the excerpts. However, one problem - I am not a retired SF medic. I don't want any misunderstandings or having anyone thinking I am trying to pass myself off as such.

Sorry Len, the change has been made to the Excerpts introduction.

Editorials

The following is an article submitted by COL Warner Anderson with accompanying editorial from the Civil Affairs-sponsored Iraqi Journal of Medicine.

ANTIBIOTIC CRISIS LOOMING

BBC NEWS/ Health Sep. 2003

Dilshad Faraj, MSC, RPh

A leading professor is warning of an antibiotic crisis, which could lead to thousands of people dying from treatable illnesses. Professor Hugh McGavock from the University of Ulster has told the BBC “gross over-prescribing” by doctors is making many antibiotics useless. He has estimated that in 12 years all antibiotics could be redundant. The professor, who specializes in prescribing science, claims the crisis with antibiotics is as big as AIDS, and over prescribing in the medical profession and the farming industry over the past 50 years has rendered many antibiotics useless. The professor estimated that by 2015, bacteria which cause disease will be resistant to all antibiotics, and diseases that are easily treatable now will be killers. He also mentioned that the majority of surgery would have to be stopped because antibiotics are needed to perform operations. Professor Roger Finch, a government advisor, agreed that humans are facing a very worrying problem, but he did not agree totally with what Professor McGavock describes; Professor Finch said measures were in place to tackle the resistance to antibiotics and to make sure a crisis did not materialize. Although new types of antibiotics are being developed which make it tougher for “bugs” to become immune to them (they work in the same way as many of the methods which the body itself fights bacterial infections), critics say bacteria will eventually become immune to these drugs and that will make the body’s natural resistance less effective. This could lead to even a simple cut taking longer to heal.

IJOM Scientific editor’s note:

Antibiotic resistance is a global threat. Every doctor, pharmacist, nurse, and other health care professional in our free country should be aware of this threat. After what the health system has been through during the last three decades every effort should be made

towards improving the health system in our country. The most important issues are patient care, better treatment, and less cost. Over-use of antibiotics is seen everywhere: in hospitals, primary health care centers, private clinics, private pharmacies, and public health clinics. Many factors contribute to antibiotic abuse, including patient demand, quality of the currently available medicines and others, but we should always be aware of the fact that over-use of antibiotics is really *abuse* and leads to drug resistance. Effective antibiotic practice is scientific, culture-based, diagnosis-specific, and cost-effective to the patient and consequently to the health system. So let us all think of saving every dinar that might be wasted on irrational use of antibiotics, and applying that dinar to a better medicine for a child or elderly patient in true need. Let us all think twice before prescribing an antibiotic in an irrational way, and thus protect our country from the global threat of antibiotic resistance.

Dilshad Faraj, MSC, RPh is a Kurdish Iraqi clinical pharmacist from the Ministry of Health who served as an interpreter for the Public Health Team of the 352nd Civil Affairs Command.

ANTIBIOTICS - To HELP OR To HARM?

Warner Anderson, MD

A 24-year old non-smoking woman in otherwise good health comes to clinic complaining of five days of purulent nasal drainage, feverishness, cough (worse when lying down), mild nausea and loss of appetite, and headache which feels like a tight hat-band. She has tried paracetamol, but it only gives her about six hours of relief. Her cough keeps her awake at night and one of her school-age children is recovering from a similar illness.

Vital signs are normal except that the temperature is slightly high at 37.5°C orally. Blood pressure, pulse, and respirations are all normal. Upon examination, this patient has mild tenderness over the maxillary sinuses but none over the frontals. Her tympanic membranes are (equally) slightly reddened but not bulging or opaque. The nares show yellow discharge without blood streaking. Her throat is slightly red but her tonsils appear normal, without significant swelling or exudates. She has no tender lymphadenopathy. There are no meningeal signs. The lungs are clear and bilaterally equal, although she is noted to have a slight rhonchus that clears with cough.

Do you prescribe antibiotics?

According to guidelines from the Centers for Disease Control and Injury Prevention, the American College of Emergency Physicians, and the American College of Physicians, no, you do not treat with antibiotics. The patient has, by overwhelming statistics, a viral infection which will improve without antibiotics, and antibiotics at this stage only increase the chances of resistance and adverse reaction.

Any national health expenditure contains a great deal of waste on unnecessary drugs. Those unneeded drugs are not just a waste of money; they do very real harm.

A child with a cough is placed on amoxicillin, then develops a viral exanthem two days later. The child is labeled “Allergic to penicillin” from that point onward and is denied a useful drug in time of real need.

A patient with mild chronic obstructive pulmonary disease has a slight increase in sputum production and is prescribed a fluoroquinolone, like levofloxacin. Two months later the patient develops a real, unrelated, pneumonia. Now, upon re-treatment with a fluoroquinolone inside the two-month window, the patient’s chances of death are significantly increased.

Experts estimate that, partly due to overuse, fluoroquinolones (gatifloxacin, ciprofloxacin, moxifloxacin, and so on) will be useless within about six years. Resistance will be so widespread that we will lose these useful weapons in our war against infection. We have seen something similar already with penicillin, sulfa/trimethoprim, and others. So we should not be surprised by this outcome. However, we *can* be surprised that we do not learn from this repetition of history.

Given that the costs to the patient and the healthcare system are very real when antibiotics are unnecessarily prescribed, how does the clinician con-

vince the patient that antibiotics will be of no use and may be harmful?

First, the clinician must validate for the patient (and the patient’s family) that the illness is real. Say something like “You are really sick. That cough is terrible, and you need to get some sleep. You should take some time in bed. I’m going to prescribe a very strong cough and pain medication (codeine, plus ibuprofen or another NSAID). You need to drink a lot of hot liquids and see me again in a week if you’re not improving, or earlier if you get worse. You have a very bad virus, and antibiotics won’t help it. These viral infections usually last two to four weeks, but the first week is the worst.”

Thus, the patient gets recognition of the seriousness of the illness, and “permission” to take it easy on other obligations such as work or household tasks. The patient receives early reassurance that you will do something for the discomfort. You address the dangers of underhydration, while directing the patient to use a home remedy widely recognized for its efficacy (hot beverages). Finally, you leave the door open for a return visit and criteria indicating the need to return. The patient has a timeline for recovery.

All clinicians have a firm obligation to avoid unnecessary drug use. A physician who prescribes antibiotics because they are the easy way to end a visit early is doing real harm to his patient and his health-care system. Developing patient expectations that every visit will generate a prescription for antibiotics also harms future encounters. The waste caused by unnecessary prescriptions is terrible, but the damage done by unneeded side effects is even worse.

Physicians, pharmacists and other health care workers have a sacred duty to protect their patients. This duty starts in the examining room, one patient and one clinician at a time.



Special Operations Medical Association Conference President's Letter

Look at SOF! Operations, equipment, doctrine, and training that were once considered SOF and unconventional now have been adopted by the conventional! Conventional forces are now aligning their capability with SOF with impunity and pride. I'm sure the SOF old timers will never forget those orphaned years in the military, when SOF careers, training, equipment, and doctrine were endangered species, always at the pointed and threatening end of the bayonet wielded by the regimented conformist martinets. Oh, what a cruel joke it is that, now, the heroes are the ones who can think and act outside the box! Whew! Note this lesson in humility, and learn.

But on a proactive note, this reversal of unconventional roles also corroborates GEN Pete Schoomaker's auspicious warning over half a decade ago, that SOF must continually evolve ahead of the tide of the conventional military in order to keep on the cutting edge - or die because it became obsolete and redundant. The theme for this year's SOMA, "Special Operations Medicine - Tip of the Spear for Today's Wars", stresses the new military mentality by confronting the roles of Special Operations in Afghanistan, Iraq, and homeland defense issues. SOMA must help SOF Medicine evolving to keep ahead - or be replaced by conventional medicine!

Along these lines, there are several notable changes for this year's conference. The involvement of the civilian tactical community is greatly increased. Recognizing the likelihood that SOF will work closely with civilian communities in homeland defense, SOMA is proactively engaging the civilian special operations medical community's participation, aiming to increase the cross-fertilization between the civilian and military SOF medics. The involvement with our international SOF medical counterparts is increased, as these personnel have unique experiences from which we can learn - especially when based upon tactics that are not dependent upon strong air and ground support! Yes, every subsequent conflict since Somalia has given us glimpses of the future, when the SOF unit on the ground might not have the option to phone in a blaster option or an escape clause. Plan for the worst while you have the time to plan the best.

This year's agenda is even better than last year. Dr. Carmona, the US Surgeon General (and prior SF medic), has again agreed to attend. In addition, we're bringing in some of the history of SOF medicine via Rudi Gresham, former aide to GEN Yarborough, who witnessed the inception of the Special Forces medic. COL(R) Ola "Lee" Mize, Medal of Honor (Korea) and four-tour Vietnam Green Beret, will also attend, and will provide historical perspectives on the SOF medic. There will be several breakout panels scheduled to allow for ad hoc presentations by recent returnees from the conflicts de jour, giving us flexibility in programming. There will be a breakout session devoted to the homeland Tactical Emergency Medical scenario, providing the forum for SOF military medics to learn about their civilian counterparts.

Several important features to note in this program are: 1) The new SOMA website is www.specialoperationsmedicalassociation.org. 2) The second annual SOMA Challenge is scheduled for Tuesday, 9 DEC 03. There are prizes, including oldest finisher. 3) Elections will be held on Monday afternoon, immediately after the last lecture (approx 1725 hrs), for three positions: SOMA President; for the newly established "civilian" TEMS Vice President; and for Secretary. Officer terms will be for 3 years. 4) SOMA Lifetime memberships will continue to be offered at registration until 11 DEC 03 (last day of SOMA).

See you in the usual places!

Steven J. Yevich, M.D.
COL(R), USA

The Special Operations Medical Association
presents the
Special Operations Medical Conference

**Special Operations Medicine:
Tip of the Spear for Today's Wars**
Intended Audience

This educational activity is designated for physicians, military SOF personnel, and their civilian counterparts. No special prerequisites are required to attend this educational activity.

**December 8-11, 2003
Hyatt Regency Tampa
At Two Tampa City Center, Florida**

Please check our website www.specialoperationsmedicalassociation.org for updates of program.

REGISTRATION

Registration can be accomplished on site in Tampa. A registration fee of \$100 for physicians; non-physician officers \$60.00 and enlisted medics and civilians \$40.00 is payable at the sign-in desk in Galleria B, which will be manned Sunday afternoon and evening and daily thereafter. All attending must register although speakers, exhibitors, and gold card members are exempt from registration fees.

ACCOMMODATIONS

A special room rate of \$89.00 single or double, and \$109.00 triple or quadruple, has been provided for the conference. However, the room block is limited. When it is filled, the rate may be higher. Also, the cut-off date for this rate is November 13th. The number to call for reservations is 813-225-1234 which should be called 8:00am-5:00pm ET days. The Hyatt 800 number will not be able to access the SOMA room block.

GROUND TRANSPORTATION

Dollar Rent-A-Car has been selected as the official car agency for the conference. Their special group rates are good for 1 week before the conference, and include unlimited mileage. Economy cars are \$24.00 per day or \$120.00 per week, with similar discounts on larger sizes. Our Group name is "SOMA" and the central reservation number is 1-800-237-8396, 9:00-5:00 CST.

UNIFORM REQUIREMENTS

The appropriate uniform for wear on opening day is the Class A uniform or equivalent for the other services. The class B or equivalent is appropriate for the subsequent days. Presenters should wear class A on the day they speak. Business casual is recommended for civilians. EMT duty uniforms, BDUs, jeans, collarless shirts, or athletic attire are not permitted in the conference rooms. Mess dress or formal attire for Mess night is neither expected nor encouraged.

SOMA CHALLENGE EVENT

The second annual SOMA Challenge is scheduled for Tuesday, Dec 9, 2003. Again this combined physical fitness/medical scenario event will be highlighted by its unpredictability in types and number of events to reflect the unpredictable nature of the SOF mission. Individuals as well as two-person teams can compete. For teams, the best scores of the two participants for each event is used: both team members do not have to compete in the entire challenge- e.g., one can run, the other can take the tag and then swim. No special equipment, other than gloves may be used. Watch for details of the assembly/start time at the conference.

MESS NIGHT

This year's Mess Night following the close of Tuesday's program, is hosted by Mr. Bill Clark of Aventis Pharma. We are happy to have Medal Of Honor winner Lee Mize, Col (ret), as guest speaker.

Learning Objectives

At the conclusion of this activity, participants should be able to:

- Describe and review lessons learned from Operation Enduring Freedom
- Perform field medical skills expected from SOF during deployment.
- Understand the position of the military in Operations Other Than War.
- Describe and manage operational aeromedical problems
- Describe and review lessons learned from Afghanistan.
- Understand homeland defense initiatives.
- Describe the special operations capabilities of other services and in other countries.

EMT and Paramedic Qualified Personnel

The USSOCOM Surgeon's Office will provide special CME certificates to all military EMT and Paramedic qualified personnel, which are to be used for re-certification with the National Registry of Emergency Medical Technicians. These are separate and distinct from the CME certificates granted by MEDCOM to all conference participants. Public and Federal civilian agencies may request these CME certificates as well -- but if they are state certified or licensed, they should check with their state agencies prior to submitting USSOCOM-provided certificates. USSOCOM is not liable for individuals' financial burden or retribution that may occur from state EMS agencies.

Personnel seeking these certificates must request a USSOCOM CME evaluation sheet at the SOMA registration desk, and fill this out during the course of the conference. It must be returned and exchanged for a CME certificate at the close of the conference. Participants will not receive a certificate without the evaluation forms. These can also be returned by mail within 2 weeks, to USSOCOM/SOCS-SG, Attn: MSgt Bob McCumsey, 7701 Tampa Point Blvd, MacDill AFB, FL 33621, or fax returned at 813-828-2568 (DSN Fax 299-2568). MSgt McCumsey can be reached at 813-828-5043 or 5442.

SOMA 2003 AGENDA

Saturday, Sunday 6-7 December

0800-1700		Component Surgeons meetings
1300-1700	Atrium	Conference Registration

Sunday, 7 December

1700	Esplanade 1	SOMA Board of Director's Dinner (invitation only)
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Monday, 8 December

0700-1700	Atrium	Conference Registration
0700-1700	Regency 1	Exhibitors
0800-0815	Regency 2-7	Administrative Remarks
0815-0830		Commanding General's Welcome Commander, USSOCOM
0830-0845		SOMA President's Remarks
0845-0935		Remarks from the Surgeon General Dr. Richard H Carmona United States Surgeon General US Public Health Service, Washington, DC
0935-1025		Birth of the SOF Medic: A History Lesson Rudi H. Gresham Senior Advisor to the Secretary Department of Veterans Affairs Washington, DC.
1025-1045		BREAK
1045-1135		HQ USSOCOM/ SG Perspective 2003 COL David L. Hammer Command Surgeon, USSOCOM MacDill AFB, Tampa, Fl

1135-1300		LUNCH
1135-1300	Buccaneer D	SOCOM Surgeon's Lunch (Invitation only)
1300-1350		Weapons of Mass Destruction & Bioterrorism Ronald D. Blanck, D.O., LT GEN USA (Ret) President, University of North Texas Health Science Center at Ft Worth, TX
1350-1440		Medical Support of the Israeli Defense Forces in the War Against Terrorism LTC Guy Lin Head, Trauma Branch, IDFX, Israel
1440-1530		Patterns of Injury and Treatment Delay: Effects on Survival Howard R. Champion, FRCS, FACS Professor of Surgery, Senior Advisor in Trauma USUHS, Bethesda, MD
1530-1545		BREAK
1545-1635		Closing the Gap: Medical Immediate Reaction Forces COL Juergen P. G. Canders Commander, Immediate Reaction Forces Command Bundeswehr, Leer, Germany
1635-1725		Managing a Hostage Incident John E. Gloriosa Sr. National Security Agency (Ret) Berlin, MD

SOMA General Membership Meeting Immediately follows

Tuesday, 9 December

0800-1700	Atrium	Conference Registration/ CME Pickup
0700-1700	Regency 1	Exhibitors
0800-1200	Esplanade	BREAKOUT: Panel Discussion of Current Case Management OEF/OIC COL Cliff Cloonan Vice Chair, Dept of Military and Emergency Medicine USUHS, Bethesda, MD
0800-0850	Regency 2-7	USASOC Medic of the Year COL Warner D. Farr Command Surgeon, USASOC Ft Bragg, NC
0850-0940		Heroism and Sacrifice in the Army Medical Department Dr. Patrick D. Sculley, MGEN, (Ret) Executive Director Sigma XI- The Scientific Research Society Research Triangle Park, NC
0940-1000		BREAK
1000-1050		Challenges With the Cold Weather Experience: Norwegian Armed Forces Experience & Solutions Lt Col Svein Torp Chief, Medical Branch Joint Medical Center, Sessvollmoen, Norway
1050-1140		Field Tropical Medicine or "Who ya gonna call" C. Betterton, MD Medical Director, Remote Area Medical Volunteer Corps Dodge City, KS
1130-1200		SOMA Challenge Contestants must be in position for Start
1200-1700		SOMA Challenge Event!!!!
1130-1300		LUNCH
1130-1300	Buccaneer D	USASOC Surgeon's Lunch (Invitation only)
1300-1350		Medical Crisis Planning and Response within USNORTHCOM Area of Responsibility

1350-1440		LTC Thomas H Berry US Northern Command Colorado Springs, CO Viva Las Vegas! TEMS in Sin City LTC Joseph Heck 6252 USAH Port Hueneme, CA
1440-1500		BREAK
1500-1550		Hemostatic Dressings: Operational Issues and Mistakes John Hagmann, MD Medical Director, FBI Hostage Rescue Team Gig Harbor, WA
1550-1640		The De-escheloning of SOF Medical Support COL Warner D. Farr USASOC Surgeon Ft Bragg, NC
1640-1730		DARPA: Persistence in Combat CAPT Harry T. Whelan Bleser Professor of Neurology Medical College of Wisconsin Milwaukee, WI
1830-2030		Aventis Pharma Mess Night Banquet
Wednesday, 10 December		
0800-1700	Atrium	Conference Registration/CME Pickup
0800-1200	Esplanade	SOF Medicine Roundtable: Lessons from Viet Nam to Iraq
0800-0850		NAVSOC Medic of the Year CAPT Edward Andy Woods Force Medical Officer NAVSPECWARCOM, San Diego, CA
0850-0940		Principles of Biological Warfare William C. Patrick, III Old Bio-weaponeer, Former US Biological Warfare Program
0940-1000		BREAK
1000-1050		Medical Aspects of Air Rescue Missions Uriel Y. Dreyfuss, COL, (Res) Israel Air Force Air Rescue Service Haifa, Israel
1050-1140		Evolution or Extinction--Future of the SOF Medic SFC Robert M. Miller NCOIC, 75th Ranger Rgt., Ft Benning, GA
1140-1300		LUNCH
1130-1300	Buccaneer D	Force Medical Officers Lunch (Invitation only)
	Buccaneer C	AFSOC Surgeon's Lunch (Invitation only)
1300-1350		Panel Discussion of Current Case Management OEF/OIC Dr. Clifford C. Cloonan Chairman, Dept of Military & Emergency Medicine USUHS, Bethesda, MD
1350-1440		Civilian and Military Cooperation in Homeland Defense-- An EMS Perspective Gregory R. Frailey, DO, FACOEP Medical Director, Pre-hospital Services Susquehanna Health System, Williamsport, PA
1440-1500		BREAK
1500-1550		Evaluation & Management of Acute Ankle Injuries Commonly seen in SOF Personnel John G. Aronen, MD Consultant, Center for Sports Medicine Saint Francis Memorial Hospital, San Francisco, CA
1550-1640		Airway Management During Casevac-The ABC's of Ventilation CAPT Arthur J. French Senior Medical Officer/Flight Surgeon

1640-1730		USCG Air Station, Port Angeles, WA Pathophysiology & Principles of Blast Injury Albert J. Romanosky, MD, PhD Emergency Department Attending Field Operations Physician FEMA NMRT Washington, DC
1830-2000	TBA	USSOCOM Command Dinner (invitation only)

Thursday, 11 December

0800-1700	Atrium	Conference Registration/CME Pickup
0800-1200	Esplanade	Breakout: Tactical Emergency Medical Services Scott Sheldon, EMT SERT Group International, Reseda, CA COL William Bograkov Maryland ARNG, LSU Academy of Counterterrorism Baton Rouge, LA
0800-0850	Regency 2-7	AFSOC Medic of the Year Col Daniel Wyman Command Surgeon, AFSOC Hurlburt Field, FL
0850-0940		Fielding the Hemostatic Dressing Under an IND LTC Harold E. Modrow USA Medical Materiel Development Activity Fort Detrick, MD
0940-1000		BREAK
1000-1050		Exertional Hyponatremia: Hidden Threat to the Athlete Operator John H. Hagmann, MD Medical Director, FBI Hostage Rescue Team Gig Harbor, WA
1050-1140		Transformation of Army SOF Medicine "A New way to do Business" Mr Joseph J. Marak USASOC Surgeon's Office, Ft Bragg. NC
1140-1300		LUNCH

**LAST CHANCE TO PICK UP YOUR CME FROM REGISTRATION DESK-
NONE WILL BE AVAILABLE AFTER THE CONFERENCE**

1300-1350		Medical Aspects of Military Operations in Urban Terrain CDR Barry A. Wayne Assistant Professor & Director, Education Div Dept Military and Emergency Med, USUHS Bethesda, MD
1350-1440		Neo-Biology: Tool or Weapon: Why is Counterproliferation Near Impossible? Martin ZiZi, PhD, MD FYSP- Molecular Neurophysiology Faculty of Medicine and Pharmacy Free University Brussels, Belgium
1440-1530		Strength and Honor: Medical Lessons Learned, Operation Iraqi Freedom MAJ Kao Bin Chou, MD, Group Surgeon CPT Patrick Carey, Medical Planner 5th Special Forces Group, Ft Campbell
1530-1620		National Guard's State Partnership Program Lt Col James Fike Liaison to ANG International Health Specialty Program Andrews AFB, MD

Adjourn



A Soldier's Neck and Shoulder Pain

Imaging Quiz reproduced with permission from Carlos E. Jiménez, MD; Elmer J. Pacheco, MD; Albert J. Moreno, MD; Alan L. Carpenter, DO. *Physician and Sportsmedicine* 1996; 24(6):81-84 ©The McGraw-Hill Companies.

A 38-year-old male soldier presented to the clinic complaining of 24 hours of persistent, bilateral shoulder and neck pain after a 12-mile road march. He denied any history of prior trauma to either area. On physical examination, there was diffuse tenderness in both supraclavicular areas as well as over the posterior neck. The patient did not respond to treatment with analgesics and nonsteroidal anti-inflammatory drugs given over a 48-hour period. Radiographs of his clavicle and neck are shown in Figure 1. He was referred to our office for a bone scan to assess a possible stress-related periosteal reaction. A bone scan of his upper body is shown in Figure 2.

Figure: Courtesy of Carlos E. Jiménez, MD

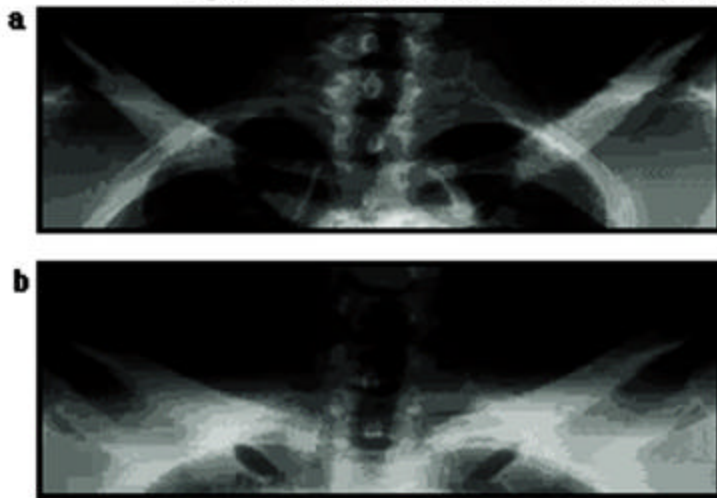


Figure 1. Posterior (a) and anterior (b) radiographs of a 38-year-old soldier's neck and clavicles. The patient complained of neck and shoulder pain after a 12-mile military march.

Figure: Courtesy of Carlos E. Jiménez, MD

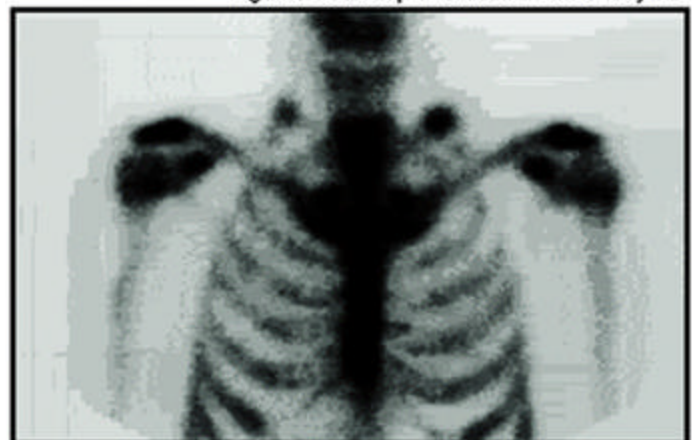


Figure 2. Anterior view bone scan of the patient's upper body.

What's your diagnosis? What tests would you order to confirm it?

Figure: Courtesy of Carlos E. Jiménez, MD

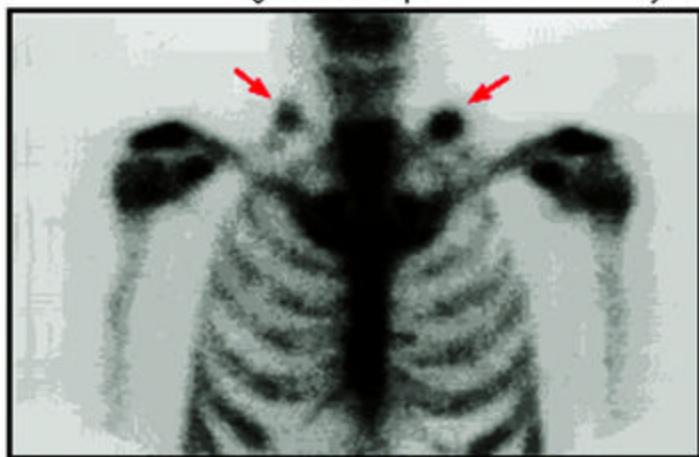


Figure 3. Anterior view bone scan of the 38-year-old soldier's neck and clavicles (detail of figure 2). The bilateral increased activity in the soft tissue in the supraclavicular regions (arrows) is suggestive of rhabdomyolysis.

DIAGNOSIS

The patient's radiographs were normal. The bone scans demonstrated bilateral increased activity in the soft tissue in the supraclavicular regions, corresponding to the location of the trapezius muscles (Figure 3). These findings suggested rhabdomyolysis, which was confirmed by the patient's serum creatine phosphokinase (CPK) level of 877 U/L (the normal range is 20-110 U/L). The serum and urinary myoglobin levels and renal function parameters were within normal limits.

TREATMENT

The patient was treated with rest, analgesics, and increased fluids. Three days later his symptoms were almost resolved, and his CPK level had returned to normal. Treatment of this condition mainly consists

of maintaining an adequate circulating fluid volume, correcting any metabolic disturbances, and ensuring sufficient diuresis to prevent renal complications.¹ The etiology of this muscle injury most likely was the heavy bilateral pressure from the soldier's backpack shoulder straps during the long training march.

DISCUSSION

Rhabdomyolysis, the disintegration of skeletal muscle tissue, can result from numerous causes, including trauma, overexertion, pressure necrosis, heatstroke, and frostbite.² Rhabdomyolysis appears to be a relatively common sequela of diverse training and competitive sports involving strenuous exercise.^{3,4} Contributing factors include lack of training, lack of heat acclimatization, profuse sweating, insufficient intake of salts, and high ambient temperature.¹

Clinically, the patient can present with many different symptoms--from mild myalgia to severe muscle pain and weakness with involvement of multiple organ systems. Other signs and symptoms include confusion, malaise, tachycardia, hyperthermia, nausea, vomiting, muscle stiffness, and contractures. Acute renal failure, life-threatening cardiac dysrhythmia, and compartment syndrome are the major complications of severe rhabdomyolysis.

The most suggestive laboratory abnormality seen in rhabdomyolysis is elevated serum CPK that is at least five times the normal value. A rise in serum myoglobin precedes the serum CPK elevation, but because the level returns to normal within 6 hours of muscle injury, this finding is helpful only for an early diagnosis of rhabdomyolysis.

Bone scintigraphy involves the intravenous injection of a bone-seeking radiopharmaceutical (in this case, technetium 99m labeled diphosphonate). Regional bone blood flow rate and bone formation rate are two of the major factors that influence the uptake of bone-seeking agents. Soft-tissue uptake of these radiopharmaceuticals will occur in certain instances. In rhabdomyolysis, uptake is believed to be secondary to cell death. This results in an intracellular influx of calcium and the formation of various calcium phosphate complexes, providing sites for radionuclide deposition. The bone scan pattern for rhabdomyolysis usually features increased activity in the muscle groups involved. The scintigraphic images are usually most prominent from 24 to 48 hours after injury and typically resolve within 1 week.

Although in most cases a bone scan is not necessary to diagnose rhabdomyolysis, it is extremely helpful when rhabdomyolysis is suspected but the serum CPK has normalized and there is unexplained renal insufficiency. In these instances, the bone scan may well be the imaging test of choice. It will not only confirm the

diagnosis, but will also determine the extent of muscle injury.⁵

REFERENCES

1. Poels PJ, Gabreels FJ: Rhabdomyolysis: A review of the literature. *Clinical Neurology and Neurosurgery* 1993;95(3):175-192.
2. Datz FL, Patch GG, Arias JA: Case 46: Rhabdomyolysis: Nuclear Medicine: Teaching File. St Louis, CV Mosby, 1992, p 54.
3. Sinert R, Kohl L, Rainone T, et al: Exercise-induced rhabdomyolysis. *Annals of Emergency Medicine* 1994;23(6):1301-1306.
4. Demos MA, Gitin EL, Kagen LJ: Exercise myoglobinemia and acute exertional rhabdomyolysis. *Archives of Internal Medicine* 1974;134(4):669-673.
5. Ludmer LM, Chandeysson P, Barth WF: Diphosphonate bone scan in an unusual case of rhabdomyolysis: A report and literature review. *Journal of Rheumatology* 1993;20(2):382-384.

The opinions or assertions presented here are the private views of the authors and are not to be construed as official or as reflecting the views of the US Department of the Army or Department of Defense.

Dr Jiménez is a second year fellow, Dr Pacheco is a staff physician, Dr Moreno is chief, and Dr Carpenter is a staff physician, all in the Nuclear Medicine Service in the Department of Medicine at William Beaumont Army Medical Center in El Paso, Texas. All are members of the Society of Nuclear Medicine. Address correspondence to Carlos E. Jiménez, MD, 7453 B O'Reilly St, El Paso,

Pharmacy Pearls

Edward Zastawny, Lt Col, BSC Deputy Commander, 59 MDTs (Pharmacy)

A 38 y/o male patient presents to the clinic with hyperuricemia. He has no other significant medical history and his labs (except uric acid ~ 11 mg/dL) are within normal limits. He's been treated with uricosuric agents to date but with only marginal results. Based on your assessment, he's an "over-producer" of uric acid and you feel he'd be a good candidate for allopurinol. When you mention this to the patient, he states he had tried this drug in the past and had pruritic maculopapular rash, requiring discontinuing of the drug. He had no anaphylactic-type symptoms during this episode. He wasn't re-challenged. Do you have any other therapy(ies) to offer him? If so, what and how?

Yes. Since he is only doing marginally better on a uricosuric agent, another uricosuric agent probably wouldn't cause significantly better results. Since he's an over-producer of uric acid, allopurinol (a xanthine oxidase inhibitor) is probably the drug of choice. Even though this patient had a skin reaction to the agent in the past, he may be a candidate for a desensitization regimen.

**** THIS IS NOT INDICATED** for patients with SEVERE cutaneous/systemic reactions such as Steven Johnson syndrome, toxic epidermal necrolysis (TEN), erythema multiforme or exfoliative dermatitis with leukocytosis, acute hepatitis, and/or acute interstitial nephritis.

The patients most likely to experience this cutaneous reaction include elderly patients, patients with renal insufficiency (allopurinol needs dose adjustment in patients with decreased CrCl - starting with CrCls < 60 ml/min), co-administration of thiazide diuretics, abnormal T-lymphocyte-mediated immune responses, and/or genetic factors.

The article referenced below defines a 28-day desensitization protocol starting with extremely low doses (50 mcg) and then doubling the dose every 3 days until you reach a dose of 100mg. In the article listed below, 2 patients inadvertently stopped their desensitization regimen and were able to restart at half the previously tolerated dose they were on when they stopped. These 2 patients followed the gradual dose escalation from their new start point.

Oxypurinol (the active metabolite of allopurinol) is available and has been used in these patients but there's a 40% cross sensitivity reported in these patients.

The reference listed below suggests the following indications for desensitization in patients with allopurinol-induced maculopapular reactions:

- 1) Patients with gout and renal insufficiency, and those requiring concomitant low-dose aspirin, which renders uricosurics ineffective
- 2) Patients with gout, 'over-production' hyperuricemia, hyperuricosuria, and nephrolithiasis in whom uricosurics can increase the risk of stone formation, renal colic, and renal failure
- 3) Patients with gout and 'underexcretion' hyperuricemia who are either allergic or intolerant to both probenecid and sulfinpyrazone (both uricosuric agents)
- 4) Patients with malignancy-associated hyperuricemia due to cytolytic therapy for myeloproliferative or lymphoproliferative disorders; the resulting massive hyperuricemia precludes the use of a uricosuric agent.

REFERENCE:

1. Fam AG, Dunne SM, Iazzetta J, Paton TW. Efficacy and safety of desensitization to allopurinol following cutaneous reactions. *Arthritis Rheum* 2001;44:231-8.

Photo Gallery



Si Ouey and friends at the Siriraj Museum in Bangkok.

Photo courtesy of MAJ Mitch Meyers

Combined medical evacuation training in Chile, Oct 2002.

Photo courtesy of Rick Hines, 3/7 BN MED NCOIC



We have more ways of getting to work than most people. Training in Peru, Fall 2001.

Photo courtesy of Rick Hines, 3/7 BN MED NCOIC



Joint Chilean/SF medical training in Chile, Oct 2002.
Photo courtesy of Rick Hines, 3/7 BN MED NCOIC

Army SGT Patino, a Reservist with the 478th Civil Affairs Battalion, checks the temperature and heart rate of a Djiboutian child during a Medical Civil Action Program (MEDCAP) held here. Soldiers from the 478th and the Navy's Emergency Medical Unit (EMU) treated more than 550 patients over a two-day period.
US Army photo courtesy of SGT Timothy S. Edwards, Public Affairs.



COL Warner Anderson of the 352nd Civil Affairs Brigade looks at what type of medicine is being used and where it came from at this Kurdish hospital in Irbil, a Kurdish province in Iraq, July 11, 2003.
US Army photo courtesy of SPC Matthew Willingham 982 SIG CO, Baghdad, Iraq (Released).

Dedication

SFC Christopher J. Speer



Sgt. 1st Class Christopher James Speer, a U.S. Special Forces soldier wounded during an attack in Afghanistan died at a military hospital in Germany. Six days before he received the wound that killed him, Sgt. 1st Class Christopher J. Speer walked into a minefield to rescue two wounded Afghan children, according to fellow soldiers. He applied a tourniquet to one child and bandaged the other, they said. Then he stopped a passing military truck to take the wounded children to a U.S. Army field hospital. Speer saved those children, his colleagues said.

Speer was assigned to the Headquarters U.S. Army Special Operations Command at Fort Bragg, North Carolina. The decorations and awards Speer received while in the Army include the Soldiers Medal, the Bronze Star Medal, the Purple Heart, the Defense Meritorious Service Medal, the Meritorious Service Medal, the Army Commendation Medal and two Army Achievement Medals.

Special Forces Aidman's Pledge

As a Special Forces Aidman of the United States Army, I pledge my honor and my conscience to the service of my country and the art of medicine. I recognize the the health, and even lives, of others. I con- the caring for the sick and injured. I nocere" ("First, thou shalt do no harm"), medical authority whenever it is avail- in my attendance on the sick, I will treat impart to others who seek the service of as I possess, and I resolve to continue to American soldier, I have determined ultimately to place above all considerations of self the mission of my team and the cause of my nation.



responsibility which may be placed upon me for fess the limitation of my skill and knowledge in promise to follow the maxim "Primum non- and to seek the assistance of more competent able. These confidences which come to me as secret. I recognize my responsibility to medicine such knowledge of its art and practice improve my capability to this purpose. As an

Pararescue Creed

I was that which others did not want to what others failed to do. I asked nothing from accepted the thought of eternal lonliess ror; felt the stinging cold of fear, and I have cried, pained and hoped...but most of forgotten. Always I will be able to say, that duty as a Pararescueman to save a life and to duties quickly and efficiently, placing these duties



be. I went where others feared to go, and did those who gave nothing, And reluctantlyshould I fail. I have seen the face of ten- enjoyed the sweet taste of a moment's love. all, I have lived times others would say best I was proud of what I was: a PJ It is my aid the injured. I will perform my assigned before personal desires and comforts.

These things I do,
"That Others May Live."

Navy Poem

I 'm the one called "Doc"...I shall not walk in your footsteps, but I will walk by your side.I shall not walk in your image, I 've earned my own title of pride. We've answered the for help was given, I 've been there right at hand. ing greens, Giving aid to my fellow man, be it corpsman and you think of calling him "squid", And if you ever have to go out there and your life is on the block, Look at the one right next to you... I 'm the one called "Doc".



call together, on sea and foreign land. When the cry Whether I am on the ocean or in the jungle wear- Sailors or Marines. So the next time you see a think of the job he's doing as those before him did.

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